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Journal of Electricity and Western Industry

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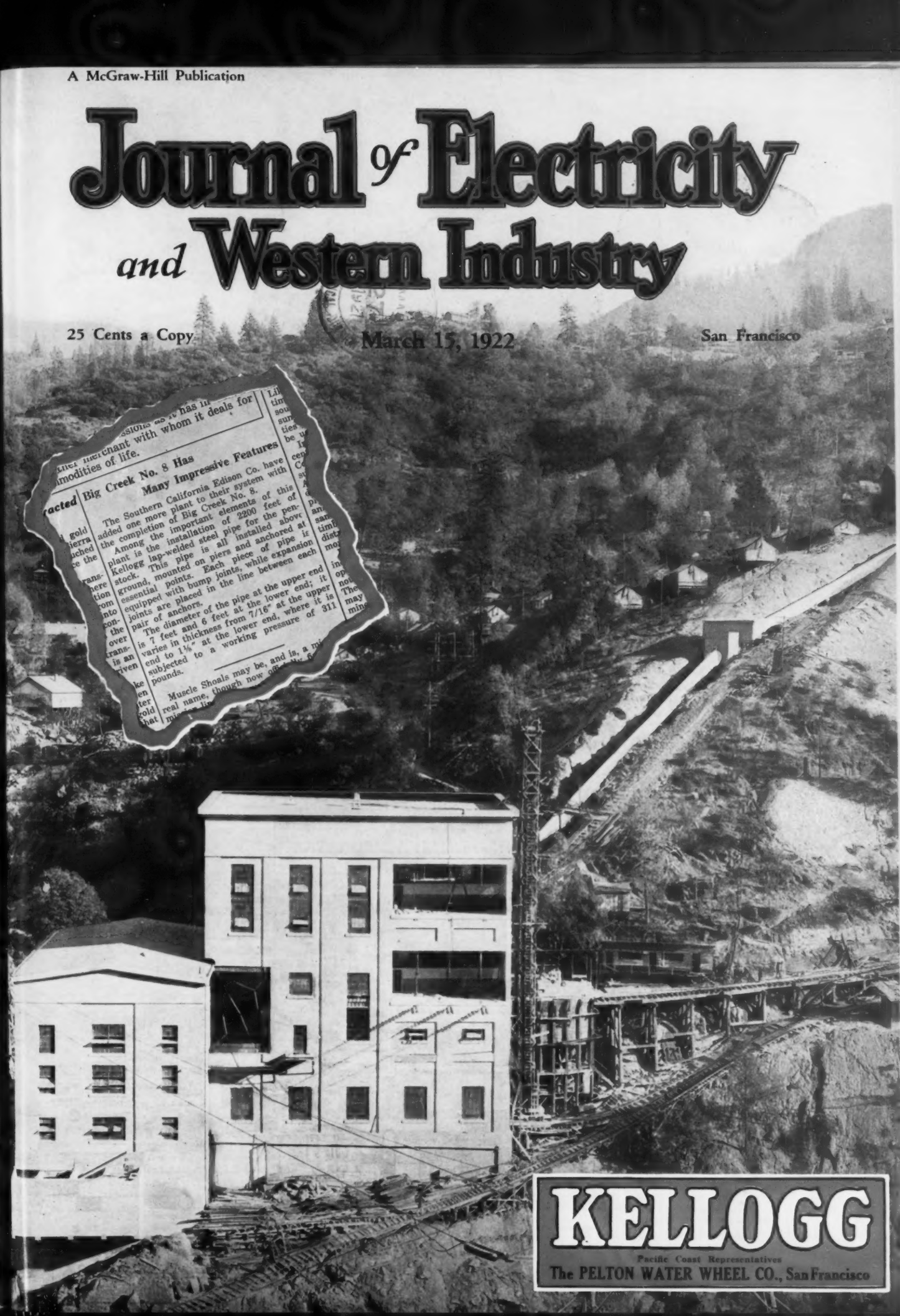
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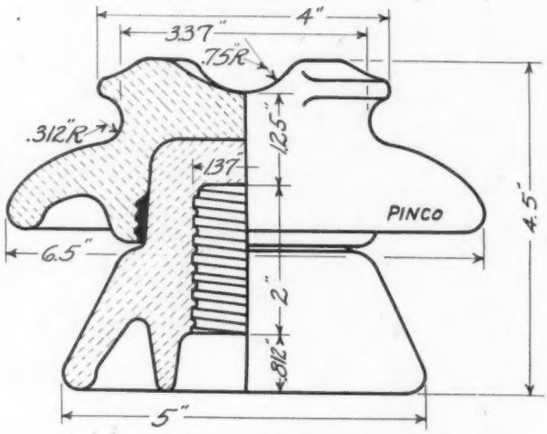

Journal of Electricity and Western Industry entered as second class matter February 17, 1921, at the post office at San Francisco, under the Act of Congress, March 3, 1879
Published the 1st and 15th of each month, at Rialto Building, San Francisco, California.

Journal of Electricity and Western Industry

A McGraw-Hill Publication

ROBERT SIBLEY, Editor — Founded 1887 — C. M. LINDSAY, Bus. Mgr.

VOLUME 48 — SAN FRANCISCO, MARCH 15, 1922 — NUMBER 6

A semi-monthly chronicle of western events, advocating the economy, efficiency and convenience of electric power for all industries of the West—manufacturing, agricultural, mining, merchandising, home building and home making. Interpreting the value of electrical development to the business and financial man, the industrial man, the power man, wholesaler and retailer, contractor and constructor, engineer and home owner.

Because of the abundance of water power in the West susceptible of economical development, a dependable, uninterrupted supply of cheaper electric power is assured for these industries. The basic industry of the West—hydroelectric power generation—for which Journal of Electricity and Western Industry is the spokesman, is therefore logically and inseparably linked to the growth and prosperity of all phases of our daily life and business.

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Subscription Rates in United States, Canada, Mexico, Cuba, Porto Rico, Hawaii, Philippines, Canal Zone, Honduras, Nicaragua, Peru, Colombia, Bolivia, Dominican Republic, Salvador and Shanghai, China, $2.50 per year. Elsewhere, $4 Gold. Single copy, 25c. When change of address is required, both old and new addresses must be given. Notice must be received two weeks before change takes place.

Member Audit Bureau of Circulation.

Printed in U. S. A.

The McGraw-Hill Company, Inc., of New York, parent company to McGraw-Hill Company of California, are also publishers of

Engineering News Record
American Machinist
Power
Chemical and Metallurgical Engineering
Coal Age
Engineering and Mining Journal-Press
Ingenieria Internacional
Bus Transportation
Electric Railway Journal
Electrical World
Electrical Merchandising
Journal of Electricity and Western Industry
(Published in San Francisco)
Electrical Review and Industrial Engineer
(Published in Chicago)
American Machinist—European Edition
(Published in London)
Pacific Mining News Supplement to Engineering and Mining Journal-Press
(Published in San Francisco)

EASTERN OFFICES:

NEW YORK, Tenth Ave. at 36th St.
WASHINGTON, D. C., 610-611 Colorado Bldg.
CHICAGO, 1570 Old Colony Building.
PHILADELPHIA, Real Estate Trust Building.
ST. LOUIS, 713 Star Building.
CLEVELAND, Leader-News Building.

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PUBLISHED SEMI-MONTHLY BY

McGRAW-HILL COMPANY of CALIFORNIA, Rialto Building, San Francisco

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Journal of Electricity and Western Industry

A McGraw-Hill Publication

ROBERT SIBLEY, EDITOR

Associate Editors

Norman S. Gallison Clotilde Grunsky George C. Tenney

Vol. 48, No. 6 SAN FRANCISCO, MARCH 15, 1922 Per Copy, 25 Cents

The OPEN-DOOR POLICY

THE electrical industry like all industries is at present feeling the pains of readjustment. A study of the tendencies within the industry would also lead one to believe that it was also afflicted with growing pains. At any rate the manufacturing, jobbing and retailing branches of the industry appear to be passing through a period of change which is characterized by a searching criticism of the system of distribution. No ready made solution appears to be at hand for many of these problems which are variously attributed to an era of competition incident to readjustment, and to the inability of the present agencies to expand with the growth of the industry. The ablest minds in the electrical, as well as other industries, are engaged in solving these complex problems, and it is apparent that some fundamental changes will result.

Of great importance in this connection is the present status of the electrical contractor-dealer. The contractor-dealer has been the recipient of advice, education, and "cooperation"; he has been cudgeled and cajoled, instructed and directed. In the past the contractor has been encouraged to become a merchant and attempts have been made to confine the distribution of electrical goods to electrical stores. This idea seems to have generally been disregarded recently, and manufacturers, in particular, are seeking outlets through hardware, furniture, drug and department stores. Whether furniture and hardware stores will gradually enter the contracting field through the opening of service departments is problematical, but is held to be inevitable by many observers.

Coincident with this competition crowding the contractor-dealer in the merchandising field, he has been seriously hampered in the contracting field in many localities by an influx of "wire-men" and "curb-stoners" who have practically monopolized the residence wiring field. Whether this condition is merely the product of the times and of passing interest is also problematical. But the results are bound to be serious and far reaching. Aside from the effect of crippling the legitimate contractor-dealer by cutting down his volume of business, much of the educational work of the past five years will have been wasted. It is of utmost importance to all branches of the industry that the domestic use of electricity be increased. Yet the itinerant contractor has no interest in this. All he sees is the immediate job, which he often takes at a loss to himself, and incalculable future loss to the customer, the jobber and manufacturer.

The electrical industry cannot afford to overlook these facts, which are nation-wide tendencies, and not confined to the West by any means.

In another part of this issue, Laurence W. Davis, Special Representative of the National Association of Electrical Contractors, makes a plea for wider extension of association activities to include these small men. He presents some powerful arguments which cannot be disregarded.

Mr. Davis believes that the solution of the problem of the "shoestring" contractor does not lie in an effort to eliminate these contractors or to lessen their number by any restriction, other than adequate license laws, safeguarding the requirements of good workmanship and protection for the public.

We hold no brief for the itinerant contractor, who in the past has not been amenable to cooperation as a class. Nor do we hold that the present associations of contractors and dealers are infallible. Nevertheless, the legitimate electrical contractor-dealer appears to have lost his position as the favored outlet for electrical goods, and his educational and cooperative associations no longer represent the industry in many communities in the country.

The alternative to restriction, which seems to have failed, appears to be absorption and education.

Industrial Prosperity Indicated by Power Sales

FIGURES on industrial sales of power in California as prepared by the Federal Reserve Bank, indicate that in spite of such measure of hard times as the state has suffered, industrial growth has gone steadily forward. Industrial sales during the month of December, 1921, were 11.5 per cent greater than during the same month in 1920. Monthly records for the past six months segregated by industries show the extent of seasonal changes in demand in agricultural sections, a gradual but steady improvement in sales to the mining industry and a similar trend (except through the period of the oil workers' strike in the San Joaquin Valley oil fields) in sales to the oil producing industry.

It is a significant tribute to the essential relationship which the electrical industry bears to all industrial development upon this coast that these figures can be taken as an accurate index of industrial prosperity. As one of the leading industries in the West, development of the power industry

itself is encouraging. During the past year's time there has been an increase in plant capacity of 24.7 per cent—a remarkable record which testifies to the readiness of the power companies to serve the needs of the West and their confidence in its steady growth. During the same period industrial consumers increased 8 per cent and the connected industrial load 10 per cent. Comparing these figures with the 11 per cent increase in industrial sales, it is obvious that not only was considerable new load added to power company lines during this period of scheduled depression, but that more power was used per unit installed in December, 1921, than twelve months before—in other words, that the plants were more active.

Re-vamping Legislation to Fit Changed Conditions

PRESENT business readjustment, with its increasing roll of commercial failures and the inevitable tendency toward keen competition and price-cutting which are the result of falling prices, sluggish markets, lack of business knowledge or just plain inefficiency, has caused the usual inquisition into our legislative procedure, the usual utopian suggestions and advocation of exploded theories. Despite the fact that the present generation of business executives have not been through a period of real depression, it is evident that there has arisen nevertheless, a more general realization of basic and fundamental economic laws which no mere legislative measure can control or to any degree influence.

There are certain laws in force which have not been amended to keep pace with changing business conditions, notably the laws regarding combinations in restraint of trade, which have in the past acted to hamper the legitimate functions of legitimate organizations or trade associations. The correspondence between Secretary Hoover and Attorney General Daugherty, which appears on another page of this issue, shows a sympathetic understanding on the part of the Secretary.

On the general subject of cooperation, with particular regard to the functions of trade associations, the following quotation from The Wire Message, published by the Habirshaw Electric Cable Company, is of interest:

> What is needed is a form of cooperation that will give accurate knowledge of supply and demand, and of the general financial and industrial situation. Such knowledge makes possible scientific production and distribution, which today is carried on in a haphazard way by many important industries. The possession of such knowledge is one of the important advantages of large organizations. Less favored industries are endeavoring to accomplish the same result by means of trade associations. It is true that at one time many of these were guilty of arbitrary price fixing, but this belongs to the distant past. What trade associations are endeavoring to do today, is to collect and distribute information, which will assist in producing a more efficient conductance of business. That such information must affect prices is obvious. No one is going to lower prices if he knows supply is short and demand increasing, or raise prices when these conditions are reversed. This does not mean an agreement as to prices, for each one has to consider special conditions which differ more or less from those of his competitors, but the general trend of the prices of each member will be the same and perhaps identical, if each gets the same information and uses it intelligently. The chief handicap to the efficiency of trade associations is the difficulty of finding some way to scientifically meet the constantly changing conditions of business, without running foul of an unchangeable law. Attorney Generals have assumed that the collecting and distribution of information that would naturally affect prices, and an opportunity to fix them, was evidence that they had been fixed, or would be unless prompt action was taken to prevent it. This attitude has forced trade associations to become largely social in character. Pleasant social relations with competitors are certainly desirable, but they contribute very little to a wide and accurate knowledge of trade conditions.
>
> Secretary Hoover has shown a sympathetic attitude towards trade associations, and a clear understanding of their purposes and value. He has asked their cooperation in collecting and distributing industrial data. It should be cheerfully and thankfully given. While the decision of the Supreme Court in the Hardwood Manufacturer's case will hamper Secretary Hoover's constructive industrial policy, it is unthinkable that some way cannot be found either to interpret the law in accordance with the rule of reason, or to amend it so that it will not be the serious menace to legitimate business that it is today. The Sherman Act and its twin brother, the Clayton Act, are entirely out of harmony with modern thought, and a serious handicap to progressive industrial development. They are useful only to furnish notoriety and fat fees, for certain members of the legal profession. These facts are forcing small independent concerns into destructive competition with powerful organizations, and encouraging mergers, which are the sole protection against such competitors. They are defeating the very purpose for which they were enacted. The decision in the Hardwood case emphasizes this fact.

Western Forests Threatened by Eastern Pest

THE above title does not refer to the dangerous attitude toward forest conversation which has been expressed by certain Washington officials, who indeed, are western, rather than eastern in their origin, but to the appearance within recent months of the white pine blister rust in western forests. This is one of the most serious pests with which the forestry department has to contend—one which has done untold damage to eastern forests in the destruction of coniferous trees. It is a native of Europe and until recently it was confined in this country to the New England and lake region, but reports indicate that it has now appeared in British Columbia and in the state of Washington.

Seven western pines are subject to attack: sugar, western white, limber, white-bark, fox-tail, bristle cone and Mexican white. The first two are among the half-dozen greatest western timber trees; all of the seven add greatly to the beauty of the western mountains. Forestry and timber interests alike are taking active steps to stamp out this disease in the West. It is to be hoped that it will be possible to check it before it spreads from the present small focal area.

Irrigation Projects on West Coast of Mexico

IRRIGATION developments in Mexico, more particularly along the West Coast, are of far-reaching importance. This is evidenced by the interest which American business is displaying in this development.

Recent Department of Commerce reports prove that export trade from the United States to Mexico has grown 472 per cent since 1913, and that 1921 maintained an increase, though small, in the face of

a falling off for all the Latin-American exports combined of $800,000,000 below 1920.

No better evidence need be found to establish the value of an understandable trade relationship between our next-door neighbor to the south and ourselves. This is particularly true of the western states and there can be no doubt that General Antil Flores, Governor of Sinaloa, will look to our own Southwest for help, both suggestive and material, when it comes to developing the five large irrigation projects now contemplated.

The first of these is under way and it is said will provide water for 450,000 acres from the Culican River. It is to be completed within six months. Present plans call for the irrigation development of 1,500,000 acres in four river valleys of western Mexico.

A No Voltage Release For the Pumping Plant

THERE is great present day need for the development of a suitable no voltage release for auto starters which will either manage to hold the starter in close position until the voltage is dropped practically to zero, or else the development of the present release by the addition of some small time element. The purpose of this development would be to bring about the elimination of interruptions to agricultural service caused by slight dips in voltage due to switching or troubles on transmission systems. More than one western power company is desirous of seeing the development of such a device. As it is now, a slight dip in voltage will cause the low voltage release to operate and disconnect the motor from the line. If this occurs in the early part of the evening in any typical agricultural district of the West, the farmer probably does not find it until the next morning, and his pump, which is probably pumping into a reservoir, has been idle all that time. With 500,000 horsepower installed in California alone devoted to agricultural pumping, this problem of the development of a proper no voltage release for the pumping plant becomes one of no mean proportions.

Cooperative Marketing Within the Law

WHEN President Harding signed the Capper-Volstead cooperative marketing bill, which legalizes cooperative associations of farms and producers for marketing purposes and exempts them from the Sherman anti-trust law, he removed the stumbling block which for years has prevented a more widespread adoption of this plan of marketing. Next to irrigation water, the western farmer has come to look upon his non-profit association as the one thing between him and constant uncertainty. True he still has lean years, when the season's report is written in red figures, but he knows that if his crop is handled through a sales organization that only takes from two to three per cent of his dollar and that bad debts amount to nothing—if anything under the sun will see him through from year to year, it is a farm marketing association.

The West is deeply grateful for the services rendered by the late G. Harold Powell. He will not soon be forgotten, nor the value of his work fail to be appreciated by those identified with the increased development of marketing organizations which will surely follow the recently enacted legislation.

The Value of Tact

WHAT may result in the loss of good will through a lack of foresight in educating its public has been well illustrated in the past few weeks by the experience of one western power company which has recently lost the business of one entire community through such a misunderstanding. In this case, an increase in rates was announced without first carrying on a publicity campaign to prepare the public for the need for such a change. As a result of this oversight, very general opposition to the new rate and to the company was aroused, with the consequence that the town purchased the distribution system and is about to obtain its power from another power company.

If anything is needed to convince power men of the need for good will advertising, such instances as this should provide convincing argument. On the same theory that it is easier to keep well than to get well, it is much the wiser to keep cordial relations with the public served than to attempt to restore them, once lost.

Gambling Has No Place in Engineering

CONTRACTS are regarded as essential to the conduct of modern business. Business agreement may be made verbally, but they are always confirmed in writing and provisions for payment, in case of abandonment of the project in mid-career, are not omitted. The engineering profession has come to take it for granted that the client's veracity is sufficient safeguard in most business transactions. That this is not always the case, is indicated by recent press reports from one western city, which quotes the city council as voting against the acceptance of an engineering report on the proposed municipal water works system.

There is a lesson in this for the entire engineering profession and especially for that branch which finds occasion to deal with municipalities and their problems. When contracts are taken with contingent clauses, they should also provide for the payment of the engineering expense incurred, even if the entire project is not completed. In this case, the assumption was made that the rendering of the report would be followed by a bond election to secure the sentiment of the people on the proposed development. The bond election was not called by the city fathers—and in the absence of a clause in the contract to the effect that such a bond election would be called, the engineers are forced to accept as final the breaking of a gentlemen's agreement.

Western Comment on Current Events

Editorial Notes and Readers' Views on the Outstanding Aspects of Financing, Trade Promotion, Legislative and Associated Topics that have a Special Bearing on Western Business

Twenty Million Construction Program

Pacific Gas and Electric Company Announces Expenditures During the Past Year in Plant Improvements and Additions

THAT the financial depression has not affected the construction program of western power companies is made clear by the announcement by John A. Britton of the Pacific Gas and Electric Company that his organization had spent $20,000,000 during the year ending December 31, 1921, in improvements and additions to plant and properties. This is only the beginning of an extensive program of construction on the Pit River and the coming year will see at least an equivalent amount expended. For a similar program, the Southern California Edison Company recently announced a $22,000,000 allowance for 1922 plans. Mr. Britton says in regard to the 1921 figures:

> The total approximates $20,000,000, with of course, as you know, a large amount of unexpended capital unaccounted for at the end of the year in shape of materials and supplies. The principal items involved are approximately $2,500,000 in ordinary daily routine expenditures; $10,000,000 in the developments on the Pit River and Hat Creek, and the balance for gas, electric and water betterments.

Montana Leads in Use of Electricity

Figures Issued by Public Service Commission Show Montana Has Well Lighted Streets and High Percentage of Wired Homes

STATISTICS on the comparative use of electricity in any community may well be taken as an index of the wide awake development of that district. Measured by such standards, the state of Montana must be taken as the most progressive spot in the United States at the present time. It is certainly the best illuminated. The public service commission of Montana is authority for the following figures:

> "The average per capita expenditure for street lighting in the United States is 71 cents. The average for the eastern states is 80 cents, while Montana leads all of the states of the Union with a per capita expenditure of $1.19.
>
> "This state ranks with the highest as a user of electricity for general purposes; we pay more for our energy than other states, not because the rates are higher, but because our citizens use more current. With the rapid development of appliances, Montana housewives were among the first to install labor saving devices designed to take the drudgery from household work, until now there is hardly a utility in the state which does not depend on the revenue from the heating, cooking and general appliance load for an ever increasing proportion of its income.
>
> "A census has recently been taken in other western states to determine the percentage of electricity users; the average was found to be about 75 per cent. Of the 22,000,000 homes in the United States, but 7,000,000 or 31.8 per cent are wired for electricity. No census has been taken in Montana, but it is interesting to note that many of our cities and towns report a ratio of one consumer to every three persons.
>
> **High Rates**
>
> "Taking 108 cities and towns of which we have complete records, both as to population and consumers, the total population is 240,166 and the number of consumers 74,517; this is a ratio of 3.4 to 1 and would indicate that many of our cities have a record of 98 to 99 per cent of homes electrified. The consumers in even the smallest towns now demand 24-hour service, and in many the lighting is considered but incidental to the general service. A home is no longer modern unless liberally equipped with 'convenience outlets' for the attachment of appliances."
>
> The commission states that the four principal watersheds of Montana are capable of development of nearly 1,000,000 horsepower of which 290,000 is utilized at the present time. The sites are located almost entirely in the western third of the state. Western Montana, it is said, offers almost unlimited possibilities; the Clark's Fork and Flathead rivers alone, with Flathead lake used for storage, are capable of developing 578,500 horsepower, using the maximum possible storage of Flathead lake.

Facts to Meet the Ontario Argument

Murray-Flood Report on the Accomplishments of the Hydro Electric Commission of Ontario Ready for Distribution

WHENEVER public ownership of public utilities is under discussion, the experience of the Hydro Electric Commission of Ontario, Canada, is brought forth as evidence of the desirability of government control. A few years ago it was the Northwest which was endeavoring to combat this argument, more recently it is California, whose Water and Power Act which comes up for voting in November, is modeled closely after the Canadian experiment.

Power men and those who have studied the question independently have always been skeptical of the reported success of the Ontario system—but in spite of apparent openness on the part of the Commission, essential facts have been difficult to obtain and vague statements of cheap rates and comparative costs have gone unchallenged.

With this issue, the Journal of Electricity and Western Industry presents not only a personal analysis by the editor of the Ontario situation from the California viewpoint, but also the report made for the National Electric Light Association by the engineering firm of Murray and Flood on "Government Owned and Controlled Compared with Privately Owned and Regulated Electric Utilities in Canada and the United States." This is a comprehensive, reliable engineering report on the entire situation and permanently settles the question as to comparative advantages of the two systems. In summariz-

ing the results of the investigation the report asserts that no system of electric service such as that operated by the Hydro Electric Power Commission of Ontario is applicable to the United States, for the reason that it is subversive of American policy and custom and in addition is inefficient, expensive and wasteful.

The publication of this report is one of the important events of the past two weeks—and combined with the local study of the California situation which is being published by the Journal of Electricity and Western Industry, beginning with this issue, should stand as a complete reference book for those interested in safeguarding our present institutions.

Colorado Plans Referred to the Senate

Secretary Recommends Government Built Dam at Boulder Canyon Financed by State Contributions for Power Rights

IT is perhaps necessary to do a certain amount of talking before any project of importance is carried out. With Secretary Fall's recommendation in his report to the Senate that the Boulder Canyon project be constructed by the government at state expense, the conversational period in the matter of the Colorado River is inaugurated. Among the Secretary's recommendations are the following:

It is recommended that through suitable exchange the United States undertake the construction with government funds of a reservoir at or near Boulder Canyon in the Lower Colorado River to be reimbursed from leasing the power privileges incident thereto.

It is recommended that any state interested in this development shall have the right at its election to contribute an equitable part of the cost of the construction of the reservoir and receive for its contribution a proportionate share of power at cost to be determined by the Secretary of the Interior.

It is recommended that the Secretary of the Interior be empowered after full hearing of all concerned to allot the various applicants their due proportion of the power privileges and to allocate the cost and benefits of the high line canal.

It is recommended that every development hereafter authorized to be undertaken on the Colorado River by Federal Government or otherwise be required in both construction and operation to give priority of right and use (1) to river regulation and flood control, (2) to use of storage water for irrigation, (3) to development of power.

It is now necessary for both the Senate and the House to consider whether or not they are willing for the United States to undertake this obligation. In view of the fact that the Southern California Edison Company has volunteered to carry out this very construction, combined with a desirable reservoir on the upper river under complete government supervision, to comply with all government regulations in the use and distribution of water, it may be that Congress will not feel it necessary to make this expenditure. Those who still have some hope that work may be commenced on the Colorado before the next flood season are urging a prompt decision—preferably turning the matter over to private initiative to carry through.

Manufacturing Figures on Coast Cities

Portland Chamber of Commerce Issues Complete Comparative Statement on Census Report for Seven Western Seaport Cities

RECORDS in 1922 manufacturing development are claimed by almost every city on the Pacific Coast and it is a dull week in which some Chamber of Commerce does not issue a bulletin setting forth the incorrectness of previously published figures (published, that is, by the Chamber of Commerce of some rival community). A relief from this unfortunate program of petty competition is the recent publication from the Portland Chamber of Commerce which lists manufacturing statistics from the seven largest seaport cities of the West. These figures were taken from the 1919 Manufacturing census and are sufficiently complete so that the reader is allowed to draw his own conclusions with some degree of fairness. They show, incidentally, that Portland ranks very high, not only in the number of establishments, but in the total value of output.

FIGURES ON MANUFACTURING IN SEVEN WESTERN CITIES

	San Diego	Los Angeles	San Francisco	Oakland	Portland	Tacoma	Seattle
	74,683	576,673	506,676	216,261	258,288	96,965	315,312
All persons Engaged in Manufacturing Enterprises	4579	59,249	61,328	26,736	31,469	12,355	47,074
Total Selling Price of All Manufactured Products at Plant in 1919 Whether Sold or Unsold	$20,226,000	$279,327,000	$417,321,000	$134,756,000	$196,380,000	$103,172,000	$274,431,000
Value Over Raw Material Cost Added by Manufacturing Operations per Person Engaged in 1919 (Total Value of Product per Person)	$2012 (4417)	$2018 (4714)	$2542 (6800)	$2647 (5040)	$2732 (6240)	$2419 (8350)	$2650 (5829)
Total Capital Invested in All Manufacturing Plants	$23,175,000	$158,861,000	$326,398,000	$118,882,000	$106,365,000	$68,098,000	$157,915,000
Value of Product in 1919 per Dollar Invested	$0.87	$1.75	$1.28	$1.14	$1.85	$1.50	$1.73
Total Industrial Salary and Wages Paid in 1919	$4,866,000	$71,956,000	$78,621,000	$36,693,000	$46,816,000	$17,602,000	$76,456,000
Value Over Raw Material Cost per Dollar of Salary and Wage in 1919 (Total Value of Product per Payroll Dollar)	$1.89 (4.15)	$1.66 (3.88)	$1.98 (5.30)	$1.92 (3.67)	$1.84 (4.20)	$1.69 (5.86)	$1.67 (3.58)
Number of Manufacturing Establishments	266	2543	2360	593	846	348	1229
Size of Plants. Average Value of Product per Plant in 1919	$76,188	$109,840	$176,830	$227,244	$232,127	$296,471	$223,296
Employes per Plant	17	23	26	45	37	35	38
Average Annual Salary and Wage per Person Employed	$1,063	$1,215	$1,282	$1,373	$1,484	$1,424	$1,624

Letters to the Editor

Interesting Sidelights on the Activities of Public Utilities in Spain

To the Editor:

Sir: I am enclosing, herewith, copy of a letter from F. M. Gillespie, who is an electrical engineer with one of the big power companies in Spain. You will note that the continental power companies apparently have somewhat the same difficulties to cope with that we have.

"During the last three years the operating department has drilled into its men the absolute necessity of politeness in all dealings with the public, and the necessity of giving the most nearly perfect service possible with the equipment at our disposal. We have had to fight a 'public be damned' attitude on the part of the men; and it has been my observation that all public utilities employes on the continent feel that the people should take what is given them and be thankful for it. Undoubtedly, the attitude of the mass of employes reflects that of their chiefs. There is now a tendency to instil the service and 'give the customer (both actual and prospective) the benefit of the doubt' idea in all departments of the several companies in this district. That is, everyone seems to be waking up to the fact that when separating the public from its money it should be done in a nice way and the customer given a reasonable return for his cash. It is going to be some time yet before relations between utilities and public are perfectly amicable, but there is a tendency to educate the public to see our point of view and to teach our men to appreciate the customer's viewpoint.

"The demand for electric power was so great during the war when coal was not to be obtained that the power companies had to close their contract departments, to all intents and purposes, and it has only been since the conclusion of our Camarasa development that any one of the three companies has had a surplus of power available. The three concerns do a little advertising in a Spanish electrical journal but nothing to brag about in a general way. That is, there has been no campaign to promote industry in general and power company business in particular; this probably is due to the reputation of Cataluna as a hot bed of industrial disturbances and the feeling that advertising would be spending money on which no return would be forthcoming. Lately, however, the Ebro company has started the practice of printing pictures and data as to our installations on the reverse side of power bills. About two hundred lantern slides of the different installations have been prepared. These are for showing in the main office windows during a couple of hours each evening. It is hoped that we can get the public to realize the amount of money that the hydroelectric developments (and especially storage reservoirs) represent, so that they will more willingly part company with the elusive coin of the realm in return for kw-hr.

"When the small (lighting, heating and small power) customer does not pay his bill on presentation, a note is sent requesting that payment be made at our office before a specified date. If this is not attended to, a collector armed with pliers, screw driver and meter sealing tools, visits the customer and uses these implements as an argument for immediate payment. This generally works. The smallest customers are not favored with such a special visit; those whose bills amount to less than a certain amount are simply disconnected after the specified time indicated on the mailed notice. When a larger consumer is slow in paying, he is visited by an agent with the 'gift of gab' whose duty is to impress on the customer the fact that we are not running a philanthropic institution and that it will be better for him to pay up and keep his motors running than to have his works shut down. The old methods were more on the strong arm order, but times are changing here as everywhere else."

EMMET N. BRITTON,
Assistant to the General Manager.
San Joaquin Light & Power Corp.

Westinghouse Company to Insure "More Business, Better Business" for 1922

To the Editor:

Sir: Referring to your interest in prospects for 1922, our company, naturally, is strongly in favor of the National Electric Light Association's slogan for 1922—"More Business, Better Business." We are prepared to do our full part in giving practical aid within our province, to all factors of the electrical industry.

We propose this year to conduct a very much greater publicity campaign in newspapers, trade papers and popular magazines than in any previous year. In our public announcements we shall continue to build goodwill for the Electric Railways, the Public Service Companies and the Electrical Jobbers and Contractor-Dealers. We will supply Dealer helps and attractive window displays. We will continue elaborate apparatus development and research programs. Our men in the field are instructed to work with national and local associations in building up a strong public interest in things electrical. They will also work closely with the commercial departments of the Service Companies, the Jobbers and the Contractor-Dealers.

We believe that with the Public Service Electric Light, Power and Railway Companies advertising broadly their efficient service to the public, with the Electrical Jobbers and the Contractor-Dealers giving prompt and satisfactory service to their customers, with the electrical press continuing its efforts to build goodwill for the industry, and the manufacturers doing their full part, and all of these interests pulling together, we shall indeed see in 1922 "More Business and Better Business" not only in our industry but throughout our country.

E. M. HERR, President.
Westinghouse Electric & Manufacturing Co.

Hydraulic Engineer Sizes Up the Business Situation in the Orient

To the Editor:

Sir: The business year of 1922 in California, no doubt, will be one of activity in fundamentals—as it might well be in the other states, and, judging from a personal survey just completed, certainly will be in Japan and Formosa.

The interest rate on capital is nearing normal, common labor can be obtained at reasonable prices, but skilled labor has not yet taken the cuts necessary to bring great activity in the finely finished products.

The fundamentals such as hydroelectric developments, irrigation projects, cement plants, highway construction, etc., requiring large capital expenditures, and considerable common labor and long time to construct, will undoubtedly engross the attention of the discriminating business men during 1922.

Power developments offer an attractive field of endeavor during this favorable period for their construction.

The horsepower developed per workman in the United States, Great Britain, and Japan is roughly as the ratios, 1 for U. S., ½ for Great Britain and ¼ for Japan, and the rate of wages paid the workman in each country is approximately in the same ratios respectively.

The production of manufactured goods is in proportion to the power applied and it follows by the inevitable law of competition that those workmen who direct the greatest amount of power per man will receive the greatest wage.

Japan, undoubtedly appreciating the truth of the above, so well exemplified in the United States, is now developing her water powers with feverish activity and a recent exam-

ination of many of the projects under construction and discussion with the engineers of the many projects in view for the immediate beginning of work give assurance that 1922 will see tremendous activity in this field in Japan.

The government of Formosa, ruled by the governor general appointed by the Mikado, is back of the 100,000-kw. development now in course of construction near Lake Jitsugetsutan, in the center of the island of Formosa.

And so Japan is constructing fundamentals today which will be the field from which prosperity will grow as surely as effect follows cause.

W. M. WHITE,
Allis-Chalmers Mfg. Co. Chief Hydraulic Engineer.

The Accomplishments of Cooperation and the Value of Group Consciousness

To the Editor:

Sir: In the present day of vast organization the term cooperation is often used in a very general and vague sense. It is true that the most general accomplishments resulting from cooperation have a value infinitely greater than suspected. Probably no greater social force exists today than the scores of fraternal, trade and social groups. Individuals, through such constant contact, are continually molding larger vision, greater unselfishness, more patience and broader humanity. One of the most important results of cooperation is group consciousness. By such an expression little more is meant than the appreciation of a group necessity, purpose and ideal. It is not likely that enthusiasm for a particular business activity would be long maintained without the reinforcement of group contacts. Today the entire business world of production and distribution is alive with organized life. It should be fully appreciated that the motive for cooperation is quite different today than fifty years ago. Modern industrial life has developed a necessity for group consciousness. This is often forgotten by the employer when important industrial relations are involved. The laboring man, above all others, must have some kind of association as a vehicle for his expression and enthusiasm. The kind of association is unimportant; the fact remains that inspiration and cooperation are not developed in men without the group sense. Machinery has made an ever increasing number of occupations and an ever increasing number of technical processes. Such a specialized activity becomes deadening through its very requirement of repetition. Such a division of labor has made possible the shorter working day and a vast number of opportunities which otherwise would have been unfulfilled. At the same time the employe, whether in an office, store or factory, becomes a mental vagabond when separated from the organized activity of his line. It is group consciousness that has made the professions of law, ministry, education and engineering. It is group consciousness that will make the profession of business.

STEPHEN I. MILLER, JR.,
Manager Secretary.
Northwest Electrical Service League.

Industrial Data Contains Only Partial List of Installed Capacity in Arizona

To the Editor:

Sir: Your February 1st number of the Journal of Electricity and Western Industry gives a "Comprehensive Listing of Industrial Plants in the Western States Using 100 Horse Power or Over" in which I would judge that Arizona is not given credit for much over ten per cent of its installed horsepower. The mining load in Arizona amounts to about 80,000 hp., whereas you list the mining load as 11,930 hp.

A. G. McGREGOR, Engineer.
Warren, Arizona.

Radio Bulletins

The Journal of Electricity and Western Industry is sending out each week by radio-telephone a report on the outstanding engineering and industrial developments in the eleven western states, together with a concise review of business conditions in the principal cities in this district. The following excerpts are representative items taken from messages sent out.

Progress on San Francisco's Hetch-Hetchy project which will give the city an unlimited supply of fresh water from the high Sierra has reached the stage where bids are shortly to be called for on the Moccasin Creek hydroelectric plant, which, when completed will generate 25,000 horsepower.

The state of Washington has announced a road building program for the coming year which will require the expenditure of more than six million dollars. Construction for the most part will be conned to the eight great arterial highways in the state.

Ralph Budd, president of the Great Northern Railway, recently announced in Seattle that that road would spend a million and a half dollars for the erection of a terminal at Wenatchee, Washington, which will cover fifty acres of ground and be one of the most complete in the West.

Three and a half million dollars will be spent on the improvement of harbors on the Pacific Coast if the report of the Rivers and Harbors Committee of the House of Representatives is accepted by Congress. Coos Bay and the Columbia River, below Portland, will each receive a million dollars. Eight hundred thousand dollars will be spent in improving both the Oakland and Golden Gate sides of San Francisco Bay and seven hundred thousand dollars will be spent on Los Angeles harbor.

The eleven million dollars which the Southern California Edison Company received from the city of Los Angeles for the company's distribution line within the city limits, will be used for financing further hydroelectric developments, according to a statement made by John B. Miller, president of the company. The company, while relinquishing its rights in Los Angeles, will continue to sell power to the city at wholesale rates.

Valdez, Alaska, has two completely electrified buildings, which have recently been completed. One is the new Seattle Hotel and the other is the Valdez Hospital. The Prince William Sound Water-Power Company is contemplating the enlargement of its plant to care for the increased heating load.

The greatest per capita use of electricity in the United States is claimed for Bend, Oregon, by the Bend Water, Light and Power Company.

Building construction is the chief item of importance in every one of the larger western cities. From all sides come reports that permits are far in excess of the same month for the preceding year, in some cases the increase being as great as 300 per cent. With the coming of spring in the Intermountain district and in the Pacific Northwest, building activities have shown a sharp rise. In Denver and Salt Lake homes are being erected to meet the housing shortage. In Los Angeles construction is centered on homes and apartment houses, with a few stores and industrial establishments. Activity in San Francisco is largely confined to the business district with three large class A structures going up. In Seattle the Pacific Telephone and Telegraph Company Building has just been completed.

The building activities have done much to eliminate the unemployment menace. However the problem is still grave in Denver and Salt Lake, where charitable organizations have been forced to care for many cases, while in San Francisco there has been a shortage of skilled building mechanics.

Reports from Portland and Seattle indicate that the lumber situation continues to improve. Figures show that shipments to the Atlantic Coast via the Panama canal increased 325 per cent during the last months of 1921. Wool and wheat prices have both increased and have caused business generally to improve.

Builders of the West

DURING the period of reconstruction, Southern California has been looked upon as the commercial "white spot" of the United States. This position has been maintained chiefly because of the healthy banking situation within that district, and this healthiness in turn has been in no small measure due to the foresight of Henry M. Robinson, president of the First National Bank of Los Angeles and the Los Angeles Trust and Savings Bank, who came to these institutions direct from contacts in Washington which gave him an international perspective and sound experience which has governed his actions as the head of these banks, during the most trying months of the reconstruction period. Mr. Robinson also brought to these banks a record of service — first, on the United States Council of National Defense, then as special commissioner at the Peace Conference, at Versailles, commissioner of the United States Shipping Board, member of the First International Labor Conference at Spa, member of the Supreme Economic Council at Paris and chairman of the United States Bituminous Coal Commission in the settlement of the coal strike. Not only was Mr. Robinson a factor in the maintenance of the white spot, as far as Southern California is concerned, but also within the past two years he has found time to serve President Harding, the republican, as faithfully in the problems of national reconstruction as he served President Wilson, the democrat, in the prosecution of the war. Mr. Robinson's last national service was as a member of President Harding's unemployment conference. Nor is this all, for it is largely due to his presentation of the methods of cooperative marketing developed in California that American bankers are coming more and more to understand the methods by which they can aid the soil producer in the marketing of his products on a broad basis, while the producer himself has come more nearly to realize some of the fundamental principles of finance under which he himself must operate if his marketing problems are to be solved.

HENRY M. ROBINSON

President of the First National Bank of Los Angeles and the Los Angeles Trust and Savings Bank, who has been a leader in the financial and industrial growth of the Pacific Southwest.

A lawyer, a student, a financier, Mr. Robinson brought to his work in California the results of a wide and varied business experience—an experience which has made him particularly able to cope with the peculiar banking difficulties of the past few years. Beginning his career in Youngstown, Ohio, as an attorney, after leaving Cornell, he was a factor in the industrial and banking development in that city, and carried the Youngstown plants into the steel combinations that took place some twenty years ago. This work finally took him to New York. In 1905, however, he retired from the financial district of New York, one of the youngest and most successful men who had ever entered and voluntarily left that field. Until the outbreak of the war he lived quietly, but, as the man behind the scene, participated in a number of the largest mergers carried on in the West. The work made him a factor in the development of the Southern California Edison Company in its merger with the Pacific Light & Power Corporation and in the creation of the Southern California Telephone Company. A trustee of the California Institute of Technology, much of his time has been given to aiding in the building up of that institution. Mr. Robinson looks upon out-door walking as a necessary mental and physical diversion. Not infrequently has he "walked out" the solution of weighty national and international problems. He is fully convinced that Los Angeles is the hub of an economic zone covering the states of the Pacific Southwest, his influence has been felt in the development of Pacific shipping, in the development of water power, in the marketing of cotton, and, above all, in the development of the cooperative marketing associations throughout California. He believes thoroughly in the theory of private initiative, developed along cooperative lines, rather than development of resources through political subdivisions.

To Henry M. Robinson, then, for his exceptional qualities which have been reflected in the successful unfoldment of so many national problems and for his masterful knowledge of the financial problems which must go hand in hand with western development, this issue of the Journal of Electricity and Western Industry is affectionately dedicated.

California Should Profit by the Experience of Ontario

Results of Twenty Years of Government Development of Water Power in the Province of Ontario Compared with the Same Period of Growth Under Private Initiative in California

By ROBERT SIBLEY
Editor, Journal of Electricity and Western Industry

TO those engaged in the electrical industry in California, and to those who have watched the unfolding of the gigantic hydroelectric program unsurpassed in ingenuity and daring which has been undertaken by the present power companies, the proposed Water and Power Act, which will be placed on the ballot of that state next November, is a challenge not to be disregarded. To those who are familiar with the history of the triumph over geographical and climatic difficulties which has placed California in the forefront as a manufacturing state and has made possible the development of a diversified agriculture which has been a bulwark against national depression, this proposal to shackle the state with an uneconomic and visionary scheme seems unbelievable. The proposal of this scheme warrants a full discussion of the facts, and I believe that when the facts are known to the people of the state, it will be found that the faith and the confidence of the pioneers of electrical development will not have been misplaced.

THIS article is the first of a series of three based upon a personal investigation by Mr. Sibley of the operations of government development of hydroelectric power in the Province of Ontario. The following articles will deal with a comparison of rates, the extent of agricultural service, and a statistical comparison of the growth of California contrasted with Ontario.

The Journal of Electricity and Western Industry is dedicated to telling the story of the fundamental role of electricity in western growth. My belief in the future industrial and agricultural prosperity of California and the West through the economic development of its hydroelectric resources by private initiative is nothing short of a religion! It was this conviction coupled with a desire to get the facts at first hand that led me to visit the Province of Ontario, Canada, for the purpose of investigating the claims made in a paper read by a personal representative of Sir Adam Beck, the recognized genius of the Hydro Electric Power Commission of Ontario, Canada, at a meeting of the League of the Southwest, held in Riverside, California, last December. These claims as to the success of this particular method of power development which have been tried out in Ontario, form a large part of the arguments of the advocates of the proposed Water and Power Act in California. I do not doubt the sincerity of the proponents of this measure, but from a personal and intimate investigation of the Ontario development, I cannot but believe that they must have been misinformed regarding many of the claims, or ignorant of the actual facts.

Why the Commission was Formed

Before discussing the physical aspects of the development of hydroelectric power from Niagara and its distribution in the Province of Ontario it is of primary importance to consider the condition which led to the formation of the Hydro Electric Power Commission in that Province. Previous to this time, some twenty years ago, the distribution of electrical energy was carried on with such inefficiency, such high rates, poor service and general disregard for the rights of the consumers that in response to a popular demand for relief from this high-handed procedure, after many gatherings of various public bodies had been held, the Provincial Government was asked by the municipalities interested, for authority to undertake the development, transmission and distribution of electrical power. Contrast this picture with the present hydroelectric situation in California, where the power companies, regulated by the State Railroad Commission, have developed such efficiency and good service, and have so won the confidence of their consumers that their securities are widely distributed among them; and where reasonable rates have resulted in a wider and more general use of electricity than in any other locality in the world. In fact, the conditions which gave rise to the Ontario Commission have never existed at any time in the history of California!

A construction view of the Queenston power house, looking from the American side of the river. One of the penstock units of 55,000 hp. has been installed. The plans call for an ultimate capacity for the plant of between 500,000 and 600,000 hp.

An Opportunity Overlooked

Instead of meeting the unpleasant situation of twenty years ago by the inauguration of government ownership and its attendant evils, the leaders of thought in Ontario, Canada, might have taken the

other course,—the stimulation of private initiative in agriculture and industry as has been done in California by placing these great projects under rigid public regulation with reasonable rewards held out for further development. Had this been done, the present day developments in Ontario, Canada—industrially, commercially and agriculturally—should have far exceeded their present proportions, for Ontario is blessed with fertile soil, with the world's greatest source of possibilities for cheap water power development and ease in power transmission. Also,

Niagara Falls, the greatest single source of water power on the American Continent, easily accessible for development and surrounded by comparatively level country. The normal minimum flow is 160,000 second-feet, but under adverse windstorms this may be reduced to 106,000 second-feet. Compare this constant source of energy with the conditions faced in developing hydroelectric energy in the West.

it is important to note that the neighboring province of Quebec, where cheap water power is not nearly so available, has completely outdistanced Ontario in all fields of economic development. Or, again in comparison with the development that has taken place on the American side, even though steam auxiliaries have been constructed there at great expense to assist hydroelectric service in the New York territory, Ontario might under properly directed and regulated private initiative have accomplished far more than it has.

Some Results in Ontario

This type of thinking in Ontario which is the result of government ownership has resulted in the belief that all related industries, such as electrical manufacturing and the preparation of semi-raw materials necessary in construction, should be owned and conducted as government and municipal enterprises. This would directly discourage private initiative or inventive genius in the whole electrical industry which in but a single generation has undergone such gigantic changes that apparently only a mere beginning in accomplishment has been effected to date. California, on the other hand, has by encouragement of individual initiative and private enterprise, harnessed its water powers and spanned its deserts and mountain gorges with energy-bearing power lines, developing that state industrially and

Airplane view of the intake of the Welland River and Chippawa Canal. Note the comparatively level character of the country which is characteristic of the Province of Ontario. Compare this with the hazards of gorge, mountain and desert of our western states.

agriculturally in spite of these difficulties to a degree that dazzles the imagination.

Let us then trace the progress of the Ontario thinking and follow its development. In 1903 the Provincial Government passed legislation authorizing the municipalities to borrow money and to undertake, individually and jointly, to generate, transmit and deliver power, and also to appoint a commission of three to five men to operate and control the system. As a consequence of this early activity the year 1906 witnessed the Legislature of Ontario passing what is known as "The Power Commission Act."

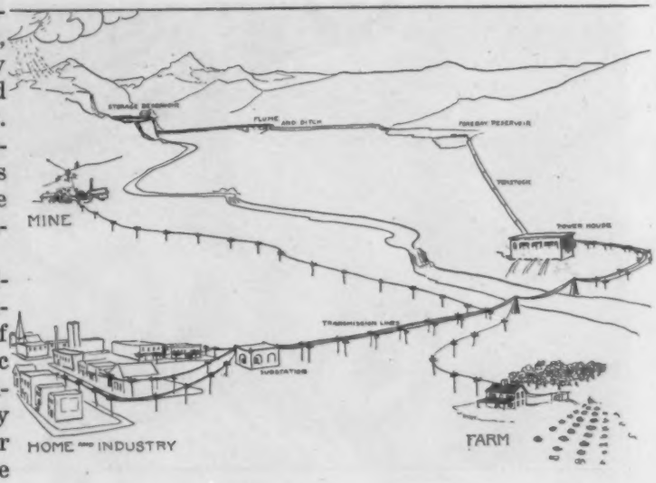
Under this legislation a Hydro Electric Power Commission was created consisting of three members, of which Sir Adam Beck is the chairman. This commission has power to acquire by purchase or develop under its own initiative the hydroelectric enterprises of the Province of Ontario, and in addition to undertake such manufacturing enterprises as it may deem proper in the progress of its work. The commission also has power to acquire by purchase, or otherwise, and hold shares in any incorporated company carrying on the business of operating, supplying and distributing electrical energy.

Act Gives a Practical Monopoly

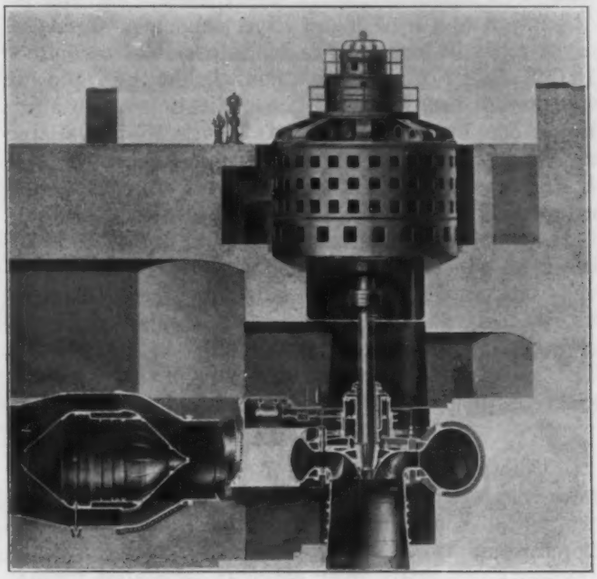
This act has been amended and broadened from year to year so that today its authority is practically absolute in the Province of Ontario. There is one important difference, however, in the Ontario plan and the proposed California Water and Power Act.

It is possible in Ontario for the Premier and Provincial Legislature to over-ride the Hyro Commission, although at present the Commission is so strongly entrenched in Ontario, it is recognized that it would be an extremely difficult task to bring this about. In California, on the other hand, the enactment proposes a constitutional amendment that so establishes a Board of five men in control that only under the recall provision of a two-thirds vote of the Legislature of the state can their hand be stayed.

Let us now examine in detail, how power development for a municipality is accomplished in Ontario. In order to develop power in the Province of Ontario under authority of this Hydro Electric Power Commission of Ontario, a municipality wishing to join the partnership must by vote of its city council first appeal to the Hydro Commission for data covering costs involved and later submit these findings to a vote of the people for final disposal. This final vote is taken in order to enter properly into a binding contract to insure the municipality's



This chart illustrates the difference in cost involved in developing hydroelectric power in California. Compare this with the map of the Ontario development. Heavy investment in giant storage reservoirs, miles of tunnels and ditches and often hundreds of miles of transmission lines, is required in California.



A cross section of the 55,000-hp. units being installed at the Queenston-Chippawa development of the Hydro Electric Power Commission of Ontario. They are the largest units thus far manufactured for hydroelectric development.

share of the obligation involved. All municipalities sign the same form of contract and agree to assume the same obligations, the amount of these obligations depending on the service rendered; that is, a municipality located 200 miles from the source of supply must pay a higher rate per horsepower and assume a larger financial obligation than a municipality located only 20 miles from the generating plant and using the same amount of power. While the Hydro Electric Power Commission has supreme charge of the extended development in its care, each municipality must elect its own local commission to handle the business of its own local system; all rates for service being fixed by the Provincial Commission.

Although the progress of growth of the Hydro Electric Power Commission activities are described by its proponents as being phenomenal, those of us familiar with the vast decade of hydroelectric construction that has just been completed in California see little in those accomplishments to fire the imagination. The facts are that, while from 1910 to 1920 the Hydro Electric Power Commission of Ontario actually constructed and put into operation something under sixty thousand new developed horsepower with a total announced building program of only 500,000 additional horsepower, those having in charge the inter-connected system of California have built and put into service over 800,000 new developed horsepower and have let major contracts involving an additional million and three-quarters horsepower for the next ten years' period.

The major portion of the Hydro Electric Power Commission's activities in the Province of Ontario seem, on the other hand, to have been devoted to taking over systems already built, and the statement of its growth including these activities is as follows:

Year %	Number of Urban Municipalities	1920 Number of Townships	Total Number of Consumers	Total Load in October Delivered in Hp.
1910	10			750
1911	26			15,214
1912	36		34,967	31,019
1913	51	7	65,689	45,502
1914	82	12	96,844	76,977
1915	112	18	120,828	103,959
1916	166	25	148,732	167,661
1917	179	34	170,916	333,399
1918	193	41	183,987	316,592
1919	208	42	216,086	328,175
1920	217	43	244,388	355,798
1921	232	44	.....	.....

Although Ontario is approximately twice the area of California these two states are comparable in that at the time of the formation of the Hydro Electric Power Commission Ontario equaled California in population, agriculture and industry. When we consider that Ontario had available the largest single source of easily developed power at her very door, and that the development of energy in California is attended with the greatest engineering difficulties, the growth of California is nothing short of phenomenal.

A view of the forebay above the Queenston power house, looking toward the American side of the river. Note the ripple stabilizer, consisting of a vertical tongue of concrete, situated in the center of the canal where it broadens into the triangular shaped forebay.

The Great Chippawa Development

We come now to a brief presentation of the one great contribution that the Hydro Commission is making to engineering—the Chippawa Development at Niagara Falls. But although bold in conception as an engineering enterprise, its financial return in cheap power is challenged by many noted experts, and the present administration of the Province of Ontario views with some concern the costs to which the project has mounted as they vastly exceed the original figures involved.

To those familiar with present power development at Niagara Falls it will be recalled that all of the water power development has thus far made use of simply the main falls of the river of some two hundred feet without utilizing the rapids that exist for several miles down stream. By tapping the waters of Niagara River above the falls and by the utilization of the Welland River, and a power canal eight miles in length, it is made possible to conduct 18,000 sec.-ft. of water to a point below the rapids at Queenston, thus enabling the utilization of an additional one hundred feet of fall over that available at Niagara Falls.

A, skiech of the Chippawa-Queenston development, showing how water is diverted around Niagara Falls and carried to a point eight miles below the intake of the Welland River, thus utilizing an additional 100 ft. of fall above that which is secured at Niagara Falls. It takes 18,000 second-feet of water to fill the canal.

From an engineering viewpoint this project is interesting. Not only does the gigantic canal show in its construction unusual skill, but the water turbines of 55,000 hp. capacity installed in this plant usher in new records in accomplishment in water wheel design. This plant when completed is designed to generate between 500,000 to 600,000 hp. Two units of 55,000 hp. are now in preliminary stages of operation.

The Financial Difficulties

Coming to the financial aspects of the situation, however, it will be instructive to see how the governmental officials in Ontario other than the Hydro Commission are viewing the costs which have increased enormously over original estimated investments involved in this Chippawa development.

Quoting as an extract from an address made November 10, 1921, by Premier Drury, of Ontario, before the Canadian Club on the Hydro Radial situation in Ontario, the Toronto Daily Star has the following to say:

"The speaker directed attention to the Chippawa development, and pointed out that in 1915 the scheme launched to develop 100,000 horsepower was to cost $10,500,000; in 1918 to develop the first five units and make provision for 275,000 horsepower the cost was to be over $25,000,000; in 1919 the scheme, fully grown to develop 500,000 horsepower, was to cost $40,000,000. Last spring they were assured finally that to develop five units and to make water preparations for developing the rest of the units that the total cost would be $54,000,000 or $55,000,000. 'I am betraying no secret,' remarked Mr. Drury, 'when I say since then a very serious situation has developed, that the government having made all preparations to finance, having arranged to finance the scheme at $55,000,000, received a most unpleasant surprise when it was told some few weeks ago that it would have to provide for the completion of the project another $10,000,000. That is very serious, and in the view of our experience perhaps we could be pardoned for lacking undue optimism.'"

A general view of the vertical section of the Chippawa Canal, showing the level agricultural character of the land through which the canal passes. In the distance is the fill where the canal was changed from vertical to trapezoidal shape in order to cross the gorge at the whirlpool of the rapids.

This speech of Premier Drury took place on November 10, 1921, and indicates that the government was already thoroughly alarmed. During the early part of December the newspapers began to print stories of an additional $10,000,000 being required, and in a personal interview with Sir Adam Beck in Toronto a week later the writer was informed by Sir Adam Beck himself that the project would cost $80,000,000. On top of this the Hydro Commission, in order to fill the canal to its 18000 sec.-ft. of carrying capacity, must under international treaty borrow water from some one of the hydro plants already in existence on the Canadian side. To meet this emergency, the commission proposes to take over the Toronto Power Company's plant at a cost of $30,000,000 which must eventually be scrapped in order to supply the water to fill the Chippawa Canal. In its leading editorial comment of December 31st, Electrical World, the leading electrica lauthority in America, had the following to say, under the caption "Ontario Overshoots the Mark":

"This week water was let into the canal of the largest hydroelectric development in Canada, the Chippawa-Queenston station of the Hydro Electric Power Commission of Ontario. Wonderful in conception, bold in engineering execution and mammoth in the size of its units, the installation stands as a monument to the vision and skill of that enthusiastic Canadian, Sir Adam Beck. But because of untoward circumstances it also stands a monument to economic folly. The Hydro Electric Commission of Ontario was able to purchase 100,000 hp. from a privately owned utility, the Ontario Power Company, for $9 a horsepower-year, and on the strength of that built up the immense network extending a thousand miles in all directions, from Niagara Falls to Toronto on the north, and to Windsor, opposite Detroit, on the west. Despite the fact that its turbines at Queenston operate under a head of 100 feet greater than that available at Niagara Falls, and thus generate one-third more energy for the same amount of water, the Hydro Electric Power Commission of Ontario cannot manufacture at Queenston, much less sell, a horsepower-year of electrical energy for twice the amount it paid to the Ontario Power Company when the company was privately owned and operated. Thus has the Hydro Electric Power Commission of Ontario, lured on by ambition, fallen into a pit of its own digging."

The question of the actual accomplishments of government ownership in Ontario in the lowering of rates and the development of industry, as compared with the accomplishments of private enterprise in California will be taken up in the second article of this series, to appear in the Journal of Electricity and Western Industry for April 1st.

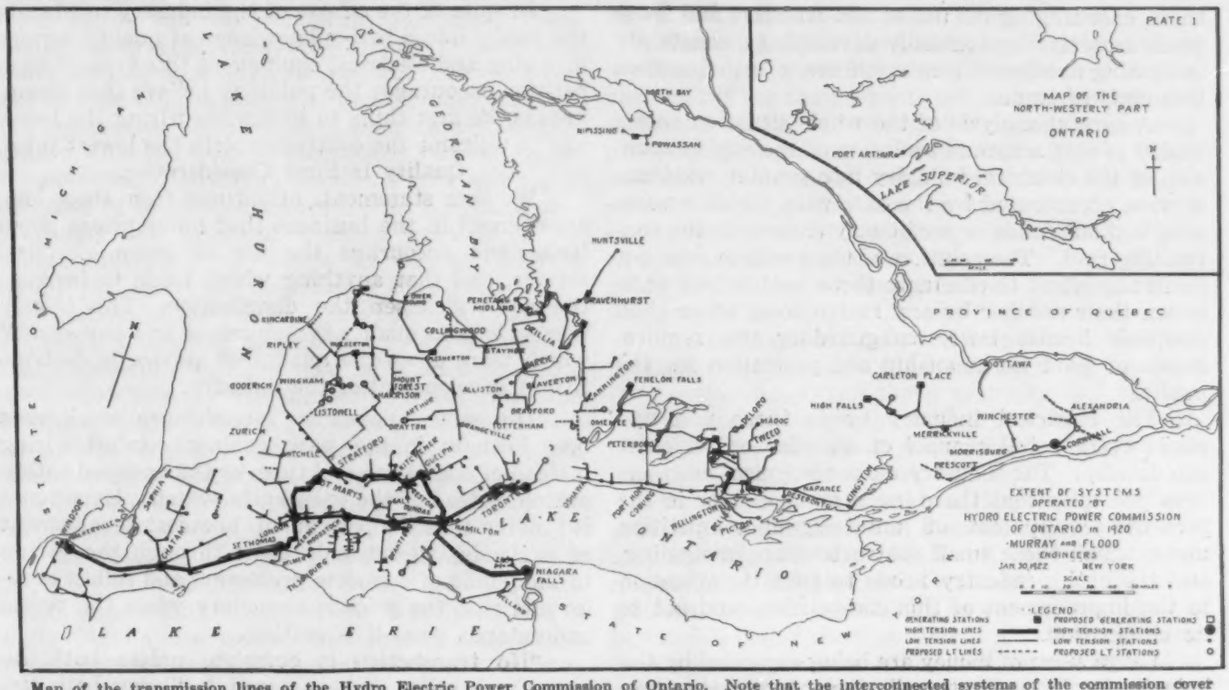


PLATE 1
MAP OF THE NORTH-WESTERLY PART OF ONTARIO
LAKE SUPERIOR
PROVINCE OF QUEBEC
LAKE ONTARIO
LAKE ERIE
EXTENT OF SYSTEMS OPERATED BY HYDRO ELECTRIC POWER COMMISSION OF ONTARIO IN 1920
MURRAY AND FLOOD ENGINEERS
LEGEND

Map of the transmission lines of the Hydro Electric Power Commission of Ontario. Note that the interconnected systems of the commission cover a territory approximately 450 by 200 miles.

What the Association Can Accomplish Through Education

The Present Members of the Contractor-Dealer Associations Need to Bring in Every Possible Competitor Before They Have Fulfilled Their Greatest Benefit to Themselves or to the Industry

By LAURENCE W. DAVIS
Special Representative of the National Association of Electrical Contractors and Dealers

THERE has been during the past few years a rapidly increasing number of small electrical contractors entering into the residence wiring business of all cities throughout the country. So great has this number become in many places that it has developed into a real menace to the best interests of the industry.

The menace, however, lies not in their number but in the character of competition under which they are struggling and which has practically driven out of the residence wiring field all of the older established contracting firms whose experience and knowledge of the cost of adequate and high grade work prohibits their attempting to compete with this class of competition.

There has been a disposition upon the part of many of the older established contractors to resent this entrance of the horde of small "wire men" into the contracting field, with an effort to prevent their becoming established factors in the business by refusing them recognition in organized association work and through discouragement of their support from the higher grade and recognized wholesale channels of supply.

This very effort at elimination is resulting actually in a further abuse of the residence wiring business through the driving of these small contractors to seeking their materials where they may find them, encouraging the use of non-standard and lower grade materials and actually developing a constantly increasing number of pirate jobbers who thrive upon this class of trade.

A careful analysis of the whole situation shows that it is only a normal evolution of the rapid expansion of the electrical industry into greater residence service, accentuated by the ease with which a wireman without funds or credit may enter into the contracting field. The solution of the problem does not lie in any effort to eliminate these contractors or to lessen their number by any restrictions, other than adequate license laws, safeguarding the requirements of good workmanship and protection for the public.

The electrical industry needs these men and needs every retail channel of distribution which it can develop. The industry must recognize, however, very promptly that there lies a great danger in the present development of unintelligent competition under which these small contractors are struggling, and the entire industry needs to turn its attention to the improvement of this competition, and not to its elimination.

Large sums of money are being expended by the industry locally and nationally towards the education of the public to better understanding of the possibilities of electrical service in the homes, to more complete installations of convenience outlets and to the securing of uniform daylight power loads through broad distribution of electrical household appliances. A large proportion of this effort is being wasted by the destructive competition of the small "curbstone" contractor who sells his job solely on a cheap price basis against similar competition he must face.

The present system of selling house wiring on a uniform outlet price is a vicious circle of destruction to all efforts to raise the standard of electrical service. Whatever the price established in any community for such wiring, the small contractor entering the field feels he must get the job at the current price or less, regardless of the proper charge necessary to set up to insure him a profit upon which he may develop, and usually without any knowledge of what his costs actually are. Having secured the job he feels his whole chance of profit must lie in the savings he may effect in the cost of materials he uses, or the amount of service he renders his customer in fulfilling his contract. He is constantly seeking cheaper, and naturally inferior, materials and striving to find ways to lessen the amount of materials and service used to give the minimum number of outlets under his contract.

In spite of the efforts of the industry to educate the public into a better knowledge of quality service in wiring and electrical equipment, this type of competition encourages the public to believe that cheapness is the first thing to seek when wiring the house and to welcome the contractor with the lowest price.

Quality Is First Consideration

We hear statements oftentimes from those long experienced in the business that lower prices popularize and encourage the use of more electrical service, and that anything which tends to increase the cost will lessen the distribution. This is only true so long as quality is maintained and any system which tears down the quality of service is destructive of development of the industry.

The same arguments for cheaper work have been brought in the past against conduit wiring instead of open knob and tube, or the enclosed safety switch instead of the open knife switch. Experience is proving that the permanent, broadest development of our industry can only come through the giving to the public of complete protection and fullest service and that the price is secondary when the public understands what it is getting.

"No transaction is complete unless both the buyer and seller make a profit." Today both the

buyer and seller in the residence wiring field are making no profits,—the buyer, because through his ignorance the article he buys fails to give him the full service his interests demand, and the seller because the price he receives is inadequate to develop him for greater future service.

Long and intimate study of the smaller contractor in hundreds of cities has convinced me that they are a potential power for service to the industry which we cannot afford to discourage. The industry needs them and needs more of them, but if it is to get a satisfactory service out of them it needs to undertake at once a thorough educational system along business lines.

I have found these men in most cases to be competent and experienced wire men; in many cases they are bright, clean-cut, oftentimes college educated, men; but they lack the fundamental knowledge and experience of business training essential to make them successful managers of their own business. They are the material which the industry must use to extend its service through residence wiring; they are already in the field and were it wise to even think of doing it, they cannot be eliminated.

Education Is Real Task

Let us awake then to the real task which is ahead of us,—the education of these men into good business executives. It is not an impossible or even difficult task. The men themselves are willing and eager to find the key to success. Their improvement as credit risks to the jobber, as buyers of better made materials and their influence as the installers of electric service in the home makes this education imperative.

The work needs to be done with the wholehearted support of the entire industry and in such a way as to win the confidence of each of these smaller contractors that the industry needs and wants him, without any reservation. The work can best be done in local groups of these smaller contractors formed into associations of their own, guided by contact with the older organizations but left to be self-governing. Meetings should be held at regular intervals, usually twice a month, with programs covering only the practical working problem of the smaller contractor, in which he himself takes a leading part under the direction of the secretary.

Analysis of the cost of doing business should be repeatedly made and emphasized in every possible way. Residence wiring should be studied by being sub-divided into all its different types, from the service entrance to the house, through all the different kinds of outlets and circuit feeds, with the amount of labor and material required for each character of work analyzed from figures provided by the men themselves.

The study of a single type of wiring such as a baseboard convenience outlet or a three-way wall switch or a ceiling light outlet is sufficient for a single night's discussion. All figures arrived at should represent only the actual prime cost of labor and material. But with each step of this analysis there should be worked out the method by which each man must determine and properly add his overhead and the profit he desires, no matter how small that may be.

It can readily be seen that it is impossible to win the confidence of competitors if any attempt were made to establish a uniform selling price. The industry needs to discover and develop those men who can give the greatest service at the lowest economic cost which will provide sufficient reward that they may develop and become capable of giving a greater future service in keeping with the growth of the industry. It can never attain this end through the placing of all men or competition on a common level.

The Results of Ignorance

Experience has proven, however, that no man will deliberately conduct his business to failure. Yet many of these small contractors are failing—over 75 per cent of those entering this field fail. The answer lies in their ignorance of fundamental business principles, and never malicious destructive competition. Place the tools for constructive competition in their hands and they will use them, and the present destructive competition will disappear.

Let us imagine an example: A contractor whose overhead is 23% of his gross business and who desires to make 10% profit on his work is blindly told to add 50% to the cost of his work. He bills a customer $150 for work which cost him $100 in time and material.

His customer comes in and complains against this addition of 50% "profit" on the time and material cost, and grudgingly admits finally the justice of this man's getting his overhead of 23% before figuring himself a profit. "But," he insists, "why add 27% more to my bill? Ten per cent is all you are entitled to. Make the bill $133, or possibly $135, and I will pay it."

What chance is there that any blind system of a common price can hold up in the face of such a customer if the contractor is not thoroughly founded in his knowledge of why a 50% mark-up will only give him 10% profit if his overhead is 23%? Without such education he readily cuts to the $135, or even lower, supposing that he has a margin of $10 or $12 clear profit at that point. As a matter of fact at $135 for this particular job, he has only 67c. of profit left to himself, and if he were tempted to cut $1 lower he would actually lost money.

Let us take that man and help him to find the principles upon which his business must be built if he succeeds. Given those principles we will not need to establish any suggested prices; the man with his eyes open will never deliberately ruin his business by working below cost.

Furthermore it would be impossible for any group of men to arrive at a common price for any type of work. We want the lowest economic cost we can secure. The average overhead cost of the contractors today is over 23%; some men may find it impossible under their present method of operating to bring their overhead below 28%; others may have succeeded in getting it down to 18%. The industry

needs those men who can give us the service at the lowest cost. But it cannot afford the great wastefulness through the thousands of men who annually go down to failure in the residence wiring field, because they do not know their costs.

The future success of association work depends upon its ability to reach out its helping hand of education and help these men to succeed. No firm which attempts to do contracting can be more successful than its competitors permit. The members of the present Contractors' Associations need to bring in every possible competitor before they have fulfilled their greatest benefit to themselves or to the industry.

The National Association through constructive series of monographs covering the principles of the conduct of the Electrical Contractor-Dealers' business, economics of retail distribution, estimating and labor data costs, tables for arriving at and using overhead percentages in figuring contracting work, etc., is putting into the hands of the electrical contractors the fundamental information needed to develop their business. During the past two years over 400 educational meetings have been held across the country in starting this work in the various localities.

But at the best the National Association can only act as a clearing house for ideas and source of information for the individual members of the local associations. It is dependent upon a broad-minded spirit in every community to make effective this work, and it is hoped that it will receive such support in a nationwide movement which will benefit the present unsatisfactory residence wiring situation.

Informal Ruling on Lawful Activities of Trade Associations

Correspondence Between Department of Commerce and Department of Justice Regarding Extent to Which Legitimate Trade Associations May Engage in Cooperative Activities

SINCE certain trade associations are involved in litigation which questioned the legality of their performances, and, by reason of the litigation, there is much doubt and confusion regarding the legal limits to which trade associations may properly operate, Secretary of Commerce Hoover wrote to Attorney-General Daugherty for an informal opinion on eleven separate forms of trade association activity, asking if such associations may lawfully engage in any or all of them, "provided the organization and the activity engaged in are not for the purpose of hiding or concealing some agreement, contract, etc., to actually restrain trade or otherwise violate the anti-trust laws." The eleven questions and the Attorney-General's reply are as follows:

1. May a trade association provide for its members a standard or uniform system of cost accounting and recommend its use, provided that the costs so arrived at by the uniform method are not furnished by the members to each other or by the members to the association and by the latter to the individual members?

2. May a trade association advocate and provide for uniformity in the use of trade phrases and trade names by its respective members for the purpose of ending confusion in trade expression and for harmony of construction as to the meaning of trade phrases, names and terms?

3. May a trade association, in cooperation with its members, advocate and provide for the standardization of quality and grades of product of such members, to the end that the buying public may know what it is to receive when a particular grade or quality is specified; and may such association, after standardizing quality and grade, provide standard form of contract for the purpose of designating correctly the standards of quality and grades of product; and may it standardize technical and scientific terms, its processes in production, and its machinery; and may the association cooperate with its members in determining means for the elimination of wasteful processes in production and distribution and for the raising of ethical standards in the trade for the prevention of dishonest practices?

Credit Information

4. May a trade association collect credit information as to the financial responsibility, business reputation and standing of those using the products of the industry; and may the association furnish such information to individual members upon request therefor, provided such information is not used by the association or the members for the purpose of unlawfully establishing so-called "blacklists"?

5. May a trade association arrange for the handling of the insurance of its members, including fire, industrial, indemnity or group insurance? In other words, can the members of an industry, through the agency of a trade association, arrange for or place all of the insurance of the members?

6. May a trade association, in cooperation with its members, engage in cooperative advertising for the promotion of trade of the members of that association engaged in the particular industry; and may the association engage in such form of promotion by furnishing trade labels, designs and trademarks for the use of its individual members?

7. May a trade association, for and in behalf of its members, engage in the promotion of welfare work in the plants or organization of its members, which welfare work includes sick benefits and unemployment insurance for employes, uniform arrangements for apprenticeship in trade education, the prevention of accidents and the establishment of an employment department or bureau for cooperation with employes?

8. May a trade association, in cooperation with its members and acting for and in behalf of its members, handle all legislative questions that may affect the particular industry regarding factories, trades, tariffs, taxes, transportation, employers' liability and workmen's compensation, as well as handling rate litigation and railroad transportation questions?

9. May a trade association, in cooperation with its members and acting for and in their behalf, undertake the promotion of closer relations between the particular industry and the federal and the state departments of government which may have administration of laws affecting the particular industry in any form?

Trade Statistics

10 (A). May a trade association collect statistics from each member showing his volume of production, his capacity to produce, the wages paid, the consumption of his product in domestic or foreign trade and his distribution thereof, specifying the volume of distribution by districts, together with his stock, wholesale or retail?

10 (B). And may such trade association, on receipt of the individual reports of each member, compile the infor-

mation in each report into a consolidated statement which shows the total volume by districts of production, which, in some instances, include a state or less area, the wages by districts of production, the consumption in foreign or domestic trade by districts, the volume of distribution by districts, and the stocks on hand, wholesale and retail, by districts?

10 (C). And if, after compiling the information as aforesaid, the information received from members as well as the combined information is not given by the association to any other person, may it then file the combined statement with the Secretary of Commerce for distribution by him to the members of the association through the public press or otherwise, and to the public generally, and to all persons who may be in any way interested in the product of the industry, it being understood that the individual reports for the members should cover either weekly, monthly, quarterly or longer periods, as may be deemed desirable by the members, and, when a period is adopted, the report for each member shall cover that period and the combined reports shall be for that period?

11 (A). May a trade association, at the time it collects the production and distribution statistics above outlined, at the same time have its members report the prices they have received for the products they have sold during the period taken, specifying the volume of each grade, brand, size, style or quality, as the case may be, and the price received for the volume so sold in each of the respective districts where the product is sold?

11 (B). And may the association, without making known to any person the individual price reports of any member, consolidate all of the reports into one and show the average price received for the total volume of each grade, brand, size, style or quality, as the case may be, distributed in each district covered by the distribution statistics for the period covered by each individual report?

11 (C). And may the association, after making such compilation, send the compiled report as to average price, as aforesaid, to the Secretary of Commerce, to be by him distributed to the public and to any or all persons who may be interested in the particular industry making the reports?

Daugherty's Reply

In his reply to these questions, the Attorney-General said:

With reference to the first paragraph, there is no apparent objection to a standard system of cost accounting, but I think associations should be warned to guard against uniform cost as to any item of expense. For illustration, a strong effort has been made by some lumber associations to take as a basis for estimating costs of production a uniform charge for stumpage. Of course the cost of the timber in the tree to the different manufacturers who own their timber in the woods greatly varies, and as to each it should be charged at its actual cost. It is as clearly a violation of the law to agree upon the cost of an item that constitutes a substantial part of the total cost price, when its cost actually varies, as to agree upon the sale price, because the sale price is substantially affected by such agreement. It has been ascertained that the members of one association go so far as to fix a uniform cost price, leaving to each member to determine what per cent profit he will add, thus eliminating entirely competition in so far as affected by the cost of production.

Furthermore, I have serious doubts about the advisability of the latter part of the sixth paragraph. I can see no objection to cooperative advertising designed to extend the markets of the particular article produced or handled by the members of an association, but when the several producers or dealers use uniform trade labels, designs and trade-marks it seems to me the inevitable result would be a uniformity of price. Where two competing articles are advertised in precisely the same way and bear exactly the same label or trade-mark, it certainly would be difficult for one to be sold at a higher price than the other, although its quality may be superior. In a way this is illustrated in the cement industry. There a standard of quality has been adopted. That is, it is necessary for all cement to comply with a certain standard, but in practice no manufacturer undertakes to make, or at least no one advertises that he does make, a grade of cement superior to that standard. The result is that there is no competition in the sale of cement so far as quality is concerned. It seems to me therefore that it would be well to eliminate the latter clause in paragraph six, to wit, "and may the association engage in such form of promotion by furnishing trade labels, designs, and trade-marks for the use of its individual members?"

I can now see nothing illegal in the exercise of the other activities mentioned, provided always that whatever is done is not used as a scheme or device to curtail production or enhance prices and does not have the effect of suppressing competition. It is impossible to determine in advance just what the effect of a plan when put into actual operation may be. This is especially true with reference to trade associations, whose members are vitally interested in advancing or, as they term it, stabilizing prices, and who through the medium of the associations are brought into personal contact with each other. Therefore the expression of the view that the things enumerated by you, with the exceptions stated, may be done lawfully is only tentative; and if in the actual practice of any of them it shall develop that competition is suppressed or prices are materially enhanced, this department must treat such a practice as it treats any other one which is violative of the anti-trust act.

In reply to this letter, Secretary Hoover commented further upon the sixth paragraph herein referred to.

Your observations regarding the last clause in question (6) in my letter are wholly sound, based on the language of that clause. It was not, however, my idea that each constituent member of a trade association would use a community trade-mark on his product, i. e., the same trade-mark that was used by every other member of the association, and, therefore, the last clause in that question was unhappily worded. The question really relates to trade promotion through cooperative advertising, in which certain trade slogans are used, such as, "Made in Grand Rapids," which was adopted by the furniture manufacturers at that furniture center. Generally, activities covered in question (6) are conducted by a trade association in a given local community. An organization at Chicago advertises for its entire membership, which includes every line of commercial endeavor in Chicago, that the city is the great central market. It is cooperative advertising of this class that tends to promote trade extension in given lines or collected lines of industry. Certain of the trade associations, however, do devise trade-marks, not for use by all members, but for individual members. It is a well-known fact that when some manufacturer or producer is fortunate enough to select a trade-mark that appeals to the public, it becomes a great aid in selling his commodity and, as a result, it is well advertised until it becomes a household word. Other producers or manufacturers of the same kind of an article, in order to take advantage of this situation, will devise a trade-name or trade-mark as near to that of the successful competitor as they think they can go and still escape suit under the trade-mark or unfair competition laws. The activities of a trade association regarding trade-marks to which I referred in my letter of the third relates to the straightening out of instances of unfair competition or infringement as between the members by undertaking to design trade-marks for the individual members of the association making the same product that would absolutely prevent confusion on the part of the public as to the producer or manufacturer of the given article and, at the same time, remove all claim of infringement or unfair competition. In other words, the trade-mark activity referred to was that of making the trade-marks of each individual member distinctive instead of common. You may, therefore, consider the part of my question (6) referred to in your letter as eliminated from the question, and that the question was really intended to cover the matters stated herein. With this explanation, I feel sure you will agree with me that our views on the matters presented are in complete accord.

Electric Heating from the Point of View of the Central Station

Central Stations Realizing Future Possibilities from Electric Heating Are Conducting Investigations and Encouraging the Use of Electric Energy for Heating Purposes Wherever Possible

By A. STRAUCH
Pacific Gas and Electric Company

ALTHOUGH the electrical industry is approximately forty years old, it is only within the past five or six years that a real effort has been made to develop the heating load. This was probably due to the relatively low cost of other fuels and the lack of appreciation of the many advantages of electric heat, such as ease of control, cleanliness, safety and convenience. It is a fact, however, that in most cases today electric heat is more costly than that produced by other means, but due to the more efficient application and perfect control, it is frequently cheaper in the end. Generally the labor cost is reduced, product improved, rejections fewer, and many times the cost of the finished product is actually less. As a result a comparison on a B.t.u. basis is frequently misleading. This is something that is being learned by experience and is rapidly opening up the industrial field. It is also a fact and especially is it true of the Pacific Coast territory that coal and oil are advancing while hydroelectric energy is decreasing in cost, with the result that many applications considered impossible, a few years ago, are now practicable, and it is reasonable to suppose that as time goes on and our fuel supplies become more and more depleted, the cost will continue to advance and in sections where hydroelectric energy is available it will eventually be cheaper for many heating operations, where at present it is considered prohibitive.

Heating of Buildings

Owing to the climatic and fuel conditions existing in California, and judging from present activities in the way of inquiries, I believe a large load will be developed in this territory for the heating of buildings. This would be very desirable for the reason that a considerable portion of the California load in particular is the pumping of water for irrigation, and since the irrigation demand is low during the winter months, the heating load would be a very satisfactory substitute. I am of the opinion that a majority of the larger central stations at least, and many of the smaller ones, realize the great future possibilities of revenue from this source, and are today conducting investigations and encouraging the use of electric energy for these purposes. Judging from recent progress it would seem reasonable to suppose that eventually the heating load could be made to surpass the motor load.

From the central station viewpoint the heating load is more desirable than the motor load on account of the high power factor as compared with induction motors; heating applications with the exception of arc furnaces, welding machines and induction heaters operate at practically unity power factor, while induction motors vary from 30% to 90%. It is also possible with many heating applications to obtain a very high load factor in some cases as much as 100% due to the possibility of heat storage, and in many cases the load can be put on at any desired time, with the result that when this load assumes large proportions, it will have a very decided effect upon the entire system. Such loading can probably be largely controlled by rates so designed as to encourage its use at the desired time. Under present conditions anything that could be added between the hours of 10 p.m. and 7 a.m. should be entitled to a better rate than if it were on during the day and early evening. If it were possible to fill in the night valley other rates could be reduced.

The possibilities of commercial and industrial applications of electric heat are many, among these uses might be mentioned hotel and restaurant cooking, bread and pastry baking, water heating, japaning, vitreous enameling, hardening, tempering, and annealing of steel, annealing of glass, heating, melting and welding of metals, applications of heat to shoe, type setting and other machinery, heating of buildings, dehydrating of fruits and vegetables, heating of oil wells to increase the flow, soldering, ironing, and melting glue. These of course are only a few of the many applications of electric heat in industry, but will suffice to convey in a limited way the possibilities of the demand for energy in this field.

A Comparison of Rates

An effort was made to collect some data as to the amount of heating load, rates charged, and what encouragement was extended to further the building of the load by a number of the larger central stations of the Eastern and Central states, as well as the Pacific Coast; but owing to limited time it was impossible to collect a large amount of information. It will suffice to say, however, that almost all replies indicated the stations were alive to the situation, and are encouraging the development of the heating load. It appears that practically all are applying their regular power schedules though some have heating schedules. It is apparent that if a power rate is more desirable it can be applied.

I have found a very great diversity of rates, with the result that it becomes quite difficult to make direct comparisons, but it appears that the Pacific Coast rates are generally lower than those of other sections. About the only direct comparison possible was to work out a concrete case based on rates prevailing in the different localities. This I have done,

taking a vitreous enameling furnace located on San Francisco bay, having a maximum demand of 100 kw. operating at a temperature of 1700° F. It is generally in operation 24 hours per day, average consumption approximately 100,000 kw-hr. per month, and is earning a rate of .96c. per kw-hr. producing a revenue of $960.00 per month.

The cost of operation in the cities listed below would be as follows:

Boston	$1782.00	per	month	rate	1,782c	per	kw-hr.
Mansfield, Ohio	1705.00	"	"	"	1.705c	"	"
Brooklyn	1625.00	"	"	"	1.625c	"	"
Detroit*	1536.00	"	"	"	1.536c	"	"
Pittsburg	1417.00	"	"	"	1.417c	"	"
Baltimore	1407.00	"	"	"	1.407c	"	"
Los Angeles	1325.00	"	"	"	1.325c	"	"
Chicago	1310.00	"	"	"	1.310c	"	"
Portland, Ore.	980.00	"	"	"	.980c	"	"

*This was a primary rate and 5% was added to cover transformer losses

The demand plus energy type of rate in various forms seems to prevail generally in the East and Central sections, while the Coast rates are mostly of the graduated block type based on connected load. It is interesting to note how nearly the same are the rates at Chicago and Los Angeles; these are based on the schedules of the Commonwealth Edison Company, and the Southern California Edison Company.

Accurate Data Unavailable

It appears that none of the stations have an accurate record of the amount of heating load connected, with the exception of Pittsburg, which reports approximately 25,000 kw. in industrial heating installations, the largest of which is 8,000 kw., and in addition they have approximately 2,000 kw. in bake ovens, cafeteria, cooking, etc., which are earning a rate of from 2c. to 3c. per kw-hr. and competing with natural gas at 45c. per thousand cubic feet. They expect the load to grow rapidly as the gas supply is diminishing, and the price increasing; a 5c. advance is now about to be made. Detroit has approximately 5,000 kw. in metal melting furnaces, and an unknown amount of oven load. Chicago estimates that they have something like 10,000 kw. in heating load.

Pacific Coast power companies fully appreciate the value and future of this load, but no accurate data exists as to the actual amount of such apparatus at present connected to the systems, on account of the fact that a large portion is operating on the regular power schedules with motors. These companies are now investigating all possible uses of electric heat and wherever it appears practicable it is given every encouragement. There are in use by some companies regular heating schedules for the smaller applications which are generally somewhat better than the power rates, but with the larger applications it frequently happens that the power schedules are more advantageous in which case they can be applied.

In conclusion I might say that I believe the electric heating field today offers the greatest opportunity for development of any branch of the industry.

"Kilo Watt" Being Starred in Movie Produced for N. E. L. A.

One Reel Film, "Back of the Button" Features Service Rendered to the Community by Power Companies

A FULLER appreciation of the service a power company renders a community is expected to result from "Back of the Button," a one-reel film which has been produced for the National Electric Light Association.

It will also give the public a comprehension of the vast investment that must be made before homes and industries may be supplied with electricity. At the same time it is designed to impress power company customers with the desirability of light company securities as an investment.

Mythology is brought up to date in "Back of the Button," which was produced by the Rothacker Film Company of Chicago. The opening scene shows a young boy playing with an electric train. "Grandpa, what makes the train go when I press the button?" asks Sonny. Taking the youngster on his knees Grandpa begins the story. "Once upon a time there lived in the clouds a great god called Thor, the god of lightning and thunderbolts, which he released at will for the destruction of his enemies." Then flashes in a scene of Thor upon his throne. He's a ferocious looking customer.

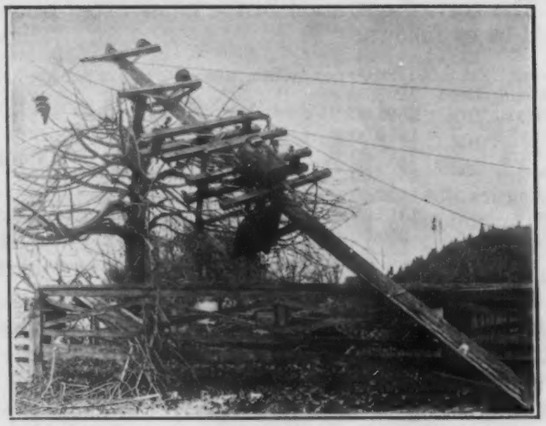
Then we see Thor looking intently at the earth, a corner of which is seen revolving at his feet. Peering through tremendous space Thor sees that the earth is a world of drudgery. He looks into the poorly lighted rooms in which humans dwell. He beholds women slaving over the rubbing board and in sweltering kitchens.

He hurls his hammer and a tremendous flash of lightning strikes the earth. Out of the striking lightning comes a puff of smoke and out of the smoke appears the well known Mr. Kilo Watt, who proceeds to clean up the house by the use of electrical appliances.

Aluminum Cable Steel Reinforced Withstands Storm

One of a Pictorial Series Featuring Interesting Applications of Electric Service, Advances in Home, Industrial and Power Construction and Noteworthy Developments in Western Progress

Close up view of the ice on the aluminum conductor, steel reinforced. This cable is .633 inch in diameter with an elastic limit of 6470 lb., ultimate strength of 9385 lb. and has a total weight of 343 lb. per 1000 ft., with conductivity equivalent to 3/0 copper.



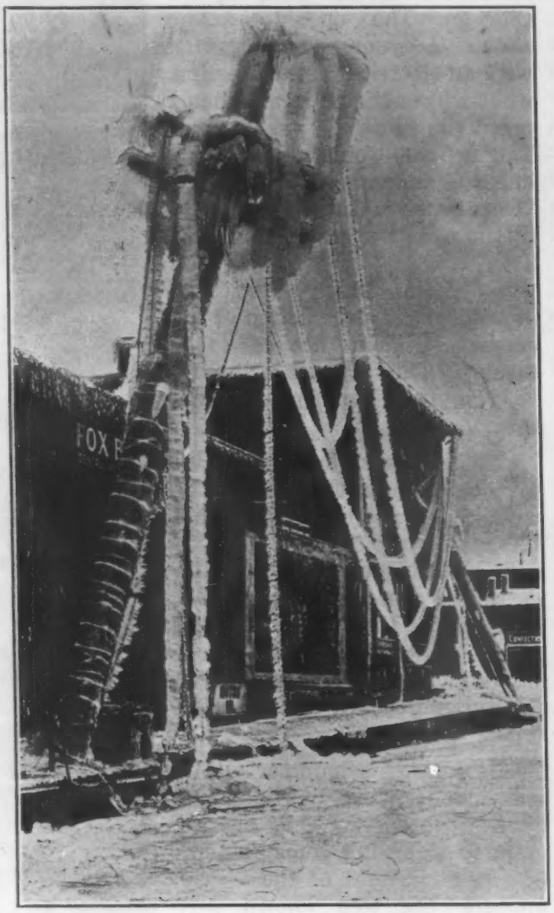
Transformer pole on Portland Railway Light and Power Company's 60,000-volt Bull Run transmission line. Note the insulator suspended to the aluminum conductor which pulled away from the cross-arm.

A FEW weeks ago, along the Columbia River several miles outside of the city of Portland and including an area of something less than 14 square miles, one of the most severe sleet storms ever experienced in the Northwest spent itself with destructive force, razing to the ground the high tension transmission lines of the various power companies in that district.

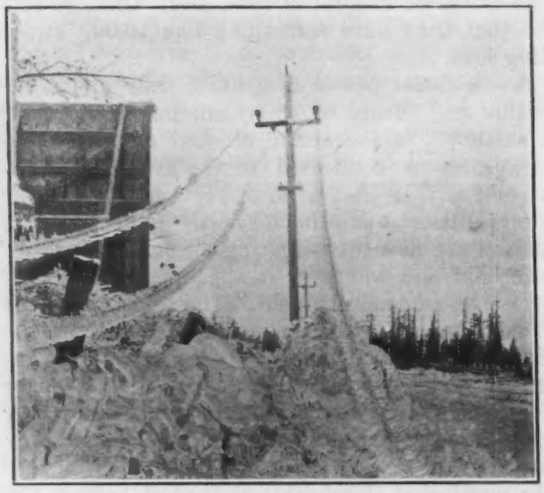
Of considerable interest was the performance of aluminum cable steel reinforced in this severe storm area. Between Cape Horn and the Portland city limits on the lines of the Northwestern Electric Co., miles of structure failed, unable to withstand the heavy loading of ice which in many places was estimated at a weight of ten tons per pole. When the storm had passed, 14 miles of poles were down, with cross-arms split or fractured and poles broken at the base and at other points. Only 50 insulators were salvaged. The strain on the conductors must have been extremely severe. The Northwestern Electric Co. reported, however, that not a single instance of conductor failure was found on that part of the system where aluminum cable steel reinforced was used.

The line described above is operated at 60,000 volts. The spans are 300 feet with single pole construction. At the angle and terminal points, standard H frame construction is used.

The photographs shown, which were furnished by Howard W. Flye, of the Aluminum Company of America, San Francisco, were taken the day following the storm, after several hours of warm rain.



Photograph of No. 2 copper conductor used for distributing purposes near the center of the storm area.



Ice on Northwestern Electric Company's White Salmon transmission line reached in some cases a diameter of eight inches, with an estimated weight of ten tons per pole.

Self Improvement in Salesmanship

A University Study Course for the Man who Meets the Public in Every Line of Business

By WILLIAM A. RUSSELL
Professor of Sales Management, University of Washington
Educational Director, Northwest Electric Service League

THE GOODS OFFERED FOR SALE

The following outline does not cover, by far, all that you should know about the goods you handle, but if you prepare for yourself a private "salesmanual" covering thoroughly the several points brought out here you will very seldom be stumped by any question of your prospect.

The Construction of Your Product

The layman very seldom knows just how things are made and from what they are made, but he does not like to show this ignorance. Hence it is entirely up to you, and to your knowledge and tact, to overcome that first feeling of embarrassment.

The external appearance of your goods is the thing that first attracts the customer's attention. Manufacturers know this very well, and usually give special thought to finish and workmanship. By showing these to the prospective buyer from the start you will frequently be able to gain the great psychological advantage of predisposing him in favor of your product. Pay particular attention to the finish of the product. The majority of good and marketable articles now produced in the national field are finished with a view to the longest and greatest possible wear. Do not expect the customer to know which finishes are superficial and wear off quickly, and which are put on to last. Learn that yourself, and put your best foot forward from the beginning.

Materials Used in Your Product

You may be selling a washing machine. Would you know whether its tub is all copper; copper lined; all zinc; copper lined sheet steel; galvanized steel; or—finally—rust resisting steel? And can you intelligently compare these materials to me, so that I, the buyer, will know their comparative qualities as materials for washing machine tubs? Is the cylinder of your machine of zinc or of wood? And if the latter, of what kind of wood? Why wood? Why zinc? Are all woods equally good for this purpose? Why, or why not? You can, and you should, ask yourself this kind of questions about practically all important materials entering into the product you sell, and you should be able to discuss these materials with your customer.

Technical Details of Your Product

The manufacturer of your product usually furnishes you with a technical description thereof in which all important details are described at length. I do not have to tell you that you should study these technical specifications. But I do have to tell you very insistently that you should not inflict these technicalities on the poor layman you try to sell your goods to. The layman who buys your goods usually does not understand the conventional language of your profession—he has ordinarily only one common language with you, the English of the street and of the home, not the English of your shop. Study the important "selling" details of your goods. Translate their technical descriptions carefully into the layman's language. Then only can you be sure that you will be able to drive your technical selling points home. Even then, avoid excesses. He is buying your vacuum cleaner to use it, and not to place it on a stand and walk around it, admiring its fine points.

And that brings me to the next item. You are interested in whether the product you handle will sell or should sell. I, the buyer, am not interested in this at all. I want to know whether my household people—and they are neither skilled mechanics nor very careful people—will or will not be able to use this machine when they want to use it.

Simplicity and Durability of Your Product

Shall I have to hire a licensed engineer to operate the electric range you are trying to sell me? Shall my wife engage a chauffeur to run the washing machine you are offering her? These are the thoughts we unsophisticated buyers have when the average electrical salesman shows us this or that appliance, and falls all over his own feet in trying to describe it to us. The reason being, of course, that he has not studied his product intensely enough. Most of the apparatus sold nowadays is designed for the use of just such people as I and my wife, and not as you and other specialists. Most appliances are very simple, and most salesmen who neglect to study them thoroughly make them look very complicated.

Study not only the simplicity of your product, but much more than that, study the method in which you present it to me so that I also, from my viewpoint, will be thoroughly impressed by its simplicity.

The latter half of the year 1920 saw the passing of the man who bought things just for the fun of buying and owning. Today, we don't buy, we invest, and if we invest, say, $150.00 in a washing machine we do not want to spend $25.00 or more every year keeping it in running order; neither do we expect to buy another machine for quite a number of years. Of course, when you sell us your machine you tell us that it will last a lifetime, and that we shall never have to spend a penny on running repairs; you all say the same thing, and we do not believe any one of you. The only thing we will believe are reliable

records. Can you produce these? Have you taken the trouble—and I grant you, this may mean quite some trouble—to supply yourself with such reliable records? Otherwise do not make extravagant claims because we would rather have you give us meager information on this point than tell us things which are palpably unsupportable.

Usability and Standing of Your Product

The first man who tried to sell my wife a washing machine had one sufficiently large to accommodate the needs of a boarding house for 20-25 people; and the second one spent about an hour and a half rather ingeniously trying to sell to her—and we have a healthy nine-year-old son—a machine of Liliputian dimensions suitable for a couple of college girls living in a two-room "suite" and laundering only their blouses and lace handkerchiefs.

I grant you that you want to sell your product, but please understand that I want to buy only that which I can use under my circumstances and conditions of living. Show me definitely what your machine will do, and what it will not do. Tell me definitely under what conditions this or that product you handle will or will not be well adapted to my needs. If you do this for your prospects, you will sell. But to be able to take that viewpoint you will have to put a considerable amount of thorough and personal study into the game of selling.

Even if your particular brand of the product you are selling were the only representative of that article on the market we—your prospective and potential buyers—dislike to be the dogs on whom it is tried. We want to know all about those who already have used it. The more you know about this, the better for your chance to sell. But, mind you, your knowledge must be specific, not general.

Of course, "everybody" is buying your brand. But how many "everybodies" have bought it right here in town? how many have been sold in the U. S. during the last twelve months? How many dealers in the whole country are handling it?

Its Reputation and Popularity

These and similar questions dealing with the popularity of your product you must be able to answer right off the reel. In most cases they will be eagerly supplied to you by the manufacturer and wholesaler. Get them, study them, and use them for all they are worth. More people buy things because many others have done so than because they are "pioneer buyers."

Endorsements and references of a local character are among the most valuable assets you may acquire with reference to your product. Be assiduous in procuring them, but be careful in using them. The wife of a labor union leader may be adversely impressed by the opinion of the leader of the local "Four Hundred," and vice versa.

Every manufacturing concern will gladly supply you with authentic information concerning its past history, its size and importance, and—in particular—its reputation. Get it, study it, but quote it with moderation and tact. Many of us are prejudiced against "captains of industry," "malefactors of great wealth" and "trusts" in general.

About Your Competitors

I do not have to tell you to study competitive products very closely and in much detail, in fact, point by point, because you are probably doing this anyway. And, quite probably, I do not have to remind you either of being very, very careful when you compare your product with a competitive one before a prospective buyer. I presume you have been told very often and very pointedly that knocking your competitor never, never sells your goods. This is all quite elementary, and practically every salesman learns this at the outset of his career. But there is another angle to the question of competition of which you may not have happened to think.

In former times we were all convinced that in a given community during a given selling season a definite and unchangeable amount of money was going to be spent, say, on pianos; another just as definite amount on automobiles; and then again quite a definite amount of electric ranges. As a result of this conviction of ours we went into the selling game with the purpose of getting at least "our share"—and if possible, much more—of this definite sum that was going to be handed out this spring or fall for all the electric washing machines together. And, of course, this led to the acutest and severest form of competitive selling, with all the implied and unescapable accompaniment of mutual recrimination and accusation of unfairness and what not.

Modern investigation has disclosed the astonishing and still widely unknown fact, fully vouched for by the most unbiased and competent investigators, that this is not at all so. That the total "spending fund" of the community is not apportioned rigidly in advance between the various articles which it will buy. On the contrary, that the various things—pianos, phonographs, clothes, electric appliances, automobiles, jewelry, furniture, etc., all compete against each other for a share of this "spending fund." In other words, that if you sell electric ranges your true competitor is not the seller of another brand of electric range, but the furniture man, the jeweler, the phonograph merchant.

Hence this most important practical lesson. Do not try to sell me your M.N.O. brand electric range as against the possible competition of the P.Q.R. electric range—sell me the idea of the electric range first, and sell it to me so hard that I will not go and spend this money on other things but will become convinced that the other things can wait.

Cutivate this attitude. Learn this new kind of competition, and you will be discovering very soon that your rival of the P.Q.R. range, with all his mean little competitive tricks, is really asleep right in front of a very large and quite uncultivated field for ranges in which you can easily reap a rich harvest.

Readers who have been following this helpful series may have noticed the omission of the name of Mr. Russell above their copies of lessons four and five. The omission was unintentional and somewhat of an injustice to Mr. Russell, whose important work in this field gives particular weight and interest to these articles.

Western Dealer, Jobber and Agent

Business building suggestions for the store—Distribution and warehousing methods—Advertising and sales promotion ideas

Montana Power Co. Sets Merchandising Record

Appliance Sales Following Intensive Advertising Campaign Total More Than Business for Two Preceding Years

Four thousand five hundred and three. This is the number of electrical appliances bought by the people of Montana during the Montana Power Company's merchandising campaign held during the month of December. This totals more electrical appliances than the company had sold during the two years prior to the campaign.

Considering the depressed economic conditions, the brief selling period and the fact that the maximum potential selling field is confined to the company's 32,000 residence lighting customers, the results are quite satisfactory. Expressed in dollars, the sale represents turn-over of $44,000 worth of stock. In terms of possible additional load, the sale of these appliances to consumers on the power company's lines means an addition of 1701 kilowatts.

A survey of the general operating situation, made in September, disclosed the probable loss in revenue for 1921—due to the nine months shutdown of the mines, mills and smelters of between $1,500,000 and $2,000,000.

In casting about for some means to get additional load on the lines, the natural thought was that the residence lighting revenue might be increased slightly, if not liberally, by stimulating the use of electrical household appliances.

The advertising director outlined the proposed advertising campaign, beginning with twelve weeks of an educational series entitled "Her Majesty, Montana." It was suggetsed that this series be followed by an intensive three weeks' selling campaign of electrical appliances with a view of testing out the sales effect of merchandise publicity and of the seventy newspapers carrying the company's advertising.

The campaign was calculated to help achieve an equally important result, viz., to bring the eight branch managers into closer association, to effect a better selling organization throughout the system and to build up the morale among the company's representatives.

With the launching of the campaign the efforts of the publicity and sales organizations began to bear instant fruit. In addition to the newspaper advertising, 44,000 reproductions of the first advertisement of the series previously published were distributed pro rata among the branch managers and were sent out as "stuffers" in the monthly bills to residence customers and by house to house delivery. A second lot of reproductions of one of the later advertisements were sent out during the middle of the campaign in a similar fashion.

As an additional aid in merchandising the appliances an Ajax two-way plug was given free to the purchaser of each appliance.

The net result of the splendid team work of the entire sales organization is shown in the fact that for twenty-one days, the organization maintained a daily average of 214 appliances sold or a total for the campaign of 4503.

Intelligent and effective cooperation by branch managers was shown in the window trimming, practical demonstrations and special entertainments put in many if not all of the branch offices.

To sum up, although the estimated revenue from current supplied to the appliances sold will not exceed more than $20,000 per year, the company feels that the sale has accomplished the following:

1. It has built up a real selling organization for subsequent use when needed.
2. It has improved the morale and increased the self-respect of all employes.
3. It has pleased the public by giving them appliances at prices previously unattainable.
4. It has demonstrated the effectiveness of commercial newspaper advertising.

Patent Medicines Invade Field of Electrical Industry

Within recent months the entire country has been flooded with extravagant claims of the advantages to be gained by the use of patent solutions or gelatines as substitutes for the normal acid electrolytes in storage batteries.

Manufacturers and dealers at first were inclined to underestimate the harm which might follow the advent of these patent medicines. According to recently published statements by large battery manufacturers many of the claims are ridiculous when submitted to analysis from the standpoint of battery chemistry. In actual tests these electrolytes prove to be nothing of value so far as contributions to the accepted standards of storage battery engineering are concerned. Dealers are taking the trouble to carefully warn their customers of the possible dangers incurred in not following the instructions which accompany all batteries sold.

Women are the country's buyers, whether in purchasing a house, furniture, electrical appliances or clothing. Christine Frederick, a prominent household economist of national repute, has stated that women purchase 48.4 per cent of all merchandise for family use and have an important voice in the selection of 23 per cent more, making a total of 71 per cent bought by women.

EFFECTIVE CENTRAL STATION DISPLAY

The Great Western Power Company of San Francisco is engaged in forwarding the sale of heating appliances with a view of increasing the company's load. The above view shows the booth of the company used at a recent industrial show in conjunction with its campaign.

Southern California Contractor-Dealers Improve Stores

New Stores, Remodeled Establishments and Many Innovations Meet Increasing Demand From Public for Improved Tactics in Merchandising Electrical Appliances

The F. E. Newbery Electric Company, Los Angeles, owned by Glen Arbogast, has catered to the public of that city for fifteen years. The growth of the store is indicated by the above view of the appliance department. The company has recently spent a considerable sum remodeling the entire establishment and has installed a special department devoted entirely to lamps.

The J. A. Newton Electric Company of Glendale, while specializing in contracting has found it advisable to devote considerable space to the merchandising of appliances.

The Golden State Electric Company, Los Angeles, outgrew its old establishment on Seventh street and opened the above new store on February 15. Contracting is its specialty.

The W. A. McNally Company, for eight years one of Pasadena's most enterprising contractor-dealer establishments, has this imposing building for transacting its business.

This is one of the Los Angeles Stores of Goodhousekeeping Shops, Inc., owned by F. A. Clarke. The show window was recently arranged so that it would swing inward leaving the store front open to the public.

Denver Sales Force Establishes Vacuum Cleaner Record

By piling up a 3000 per cent business increase in six months, a Royal cleaner sales force, operating in connection with two large retailers of Denver, demonstrated beyond question the power of the fighting spirit.

Local sales for their product were in this sickly state of affairs: Where the average progressive community will have one electric cleaner in every three wired houses, in Denver a leading competitor alone had already sold his cleaner to one of every four homes. There were 15,000 cleaners of other makes in service in this city of 270,000 population and so few Royals that they didn't count. It appeared that competitors had a strangle hold on an almost saturated field.

It was under these adverse conditions that a healthy mental attitude and an unlimited amount of work put over the 3000 per cent increase. Six green men whose main qualification was a real desire to work began to canvass all day and study most of the night. They refused to devote a single precious moment to the prevalent laments—"Business is dead"—"Buyers are on a strike"—"Competition is too strong." Instead, at the end of each strenuous day, they headed for the salesman's training school.

An intensive advertising campaign and a well arranged demonstration both aided in making the record.

After six months of this, P. R. Conley and R. T. Ginn, who officered the campaign, were able to report that Denver instead of being a lost hope was a coming field, one dealer having sold twenty-one times as many Royals as were ever sold in Denver in any one year, and another dealer sold ten times as many as the best previous yearly total.

Publicity as a Means of Benefiting the Industry

Value of News Columns of Daily Press Underestimated by Electrical Men in Giving Public the "Electrical Story"

By R. G. EMERSON
Field Representative, Northwest Electrical Service League

That the right kind of publicity will accomplish much for the good of the electrical industry is readily apparent, yet there is, perhaps, no other avenue of enterprise which we of the electrical industry have so consistently avoided.

In our individual and collective endeavors to further the progress of the electrical industry we are usually concerned with three objectives: to educate the public as to the importance of the industry; to demonstrate the advantages of doing it electrically and thus stimulate sales of service and supplies, and to unify the whole electrical industry.

Publicity will achieve all three of these ends.

And by "publicity" we mean items and editorials favorable to the industry appearing in the daily newspapers. Publicity is differentiated from advertising by the fact that one is "paid space," while the other comes under the head of "news." Because of the obvious impartiality and greater authenticity of "publicity" it is that much more effective than the usual run of advertising.

If we recognize the importance of proper publicity to the electrical industry the question arises as to how we—the individual members of the industry—can increase the amount of favorable publicity. If the following paragraphs aid in answering this question they will have served a good purpose.

First of all there are the editorial columns. Every editor has his moments when he's wondering upon what subject he'll write his editorials for the next day. The electrical men of the community should keep the editors supplied with interesting material regarding the power possibilities of that community, or the advantages of "doing it electrically." Valuable educational publicity will result.

As regards the news columns the answer is much the same. Let us remember that whatever is "news" is wanted by the city editors. "Today's news today" is the unwritten slogan of every successful journalist and he will appreciate any "news" information that you can give him. If there is a meeting of the electrical men, if a "big" electrical man comes to town, or if anything at all happens which contains favorable mention of the electrical industry and which is news, phone the city editor. Electricity is a most interesting subject and every day there are many possibilities for constructive publicity.

If there is a cooperative electrical page in one of the local papers the editor of that page will appreciate all the electrical material dealing with the local field we can give him, as he has to rely upon the trade journals and manufacturers' publications for most of his news matter.

Probably the most effective way to handle local electrical publicity for the editorial columns, the news section, or the electrical page is to have an individual or a committee responsible for sending material to the papers. If there is an electrical club or similar organization it is a good plan to have someone in charge of this work.

Publicity, then, is a very important factor in the development of the electrical industry and should be recognized as such.

Six salesmen piled up a three thousand per cent business increase in Denver recently in the sale of Royal vacuum cleaners. The above demonstration booth was one of the means they employed in making this record.

Unique Display Calls Attention to Repair Department

By J. T. BARTLETT
Boulder, Colo.

They have been much joked about, those old-fashioned patent medicine advertisements which depicted a user before and then after taking, but at that, they were highly effective. The same idea in a display advertising its repair department was recently used by the Denver Gas and Electric Light Company.

It took up just a little room in a window which also advertised various electrical goods. The "pieces" of a wrecked iron were thrown together. It resembled a pile of junk. It had been, you would say to look at it, through half a dozen fires, a train wreck, and a flood. A card placed beside the "remains" was lettered, "Before." A foot away, to the right was a resurrected iron, described by a card, "After." It looked like a brand-new iron.

It was a telling method of impressing on people how elaborate repairs a good repair department can make. A large card in the rear of the display began, "Yes, We Repair Irons, Percos," etc.

Activities of the West

A Business Man's Department Devoted to Events and Developments in Western Industrial Centers—Including News of Interest to Readers in Public Utility, Industrial and Trade Fields

Northern Railroads Expand

Purchase of Branch Lines by Great Northern and Northern Pacific Taps Timber Land

Timber owners whose holdings are in the northwest corner of the state of Oregon are elated over the acquisition by the Great Northern and Northern Pacific systems of the Gales Creek and Wilson River Railroad. The purchased line, built by the Washburn timber holding interests, is fourteen miles in length, from Wilkesboro, the westerly terminus of the United Railways line, to Agaard. This purchase followed closely the acquisition by the Great Northern and Northern Pacific of the Portland Astoria & Pacific line, constructed from Wilkesboro to the center of Nehalem valley, thirty-three miles. These purchases were made undoubtedly for the purpose of extending feeder lines to develop and hold the prospective immense timber and lumber traffic from the great forests of northwestern Oregon. The Northern Pacific and Great Northern are joint owners of the United Railways system and the Spokane, Portland & Seattle Railway Company's lines now partially serving this section of the state.

These purchases are said to mark a move on the part of transcontinental railroads to provide transportation facilities to the yet comparatively untouched timber resources of the northwestern part of the state of Oregon and that it is probable that the Southern Pacific and Union Pacific systems will in like manner make purchases and extensions to meet the needs of the timber owners.

Difficulties of transportation and the almost prohibitive freight rates made by trunk lines on logs to the Willamette river are forcing sawmills more and more into the timber.

Washington to Spend $6,550,000 on Highway Program

The state of Washington's highway program for the year 1922 includes the grading and graveling of more than 135 miles of road, and the paving of approximately 60 miles, at a cost of approximately $6,550,000, according to State Supervisor of Highways, James Allen. Construction for the most part will be the improvement of the eight great arterial highways: the Pacific, Sunset, National Parks, Olympic, Navy Yard, Ocean Beach, North Bank and Inland Empire. Approximately $2,000,000 of federal money will be available for use, the state will furnish $3,000,000 and the U. S. Forestry Department will expend approximately $300,000 toward the improvement of forest roads.

View of the new eleven-story building recently completed by the Pacific Telephone and Telegraph Company in Seattle. The structure cost $1,500,000.

Telephone Company Completes New Building in Seattle

The new eleven-story building of the Pacific Telephone and Telegraph Company, recently completed in Seattle at a cost in excess of $1,500,000, is the finest structure erected in the northern city since pre-war days.

This structure, of steel frame construction, faced with terra cotta and brick, stands on the corner of Third Avenue and Seneca street. In size it is 118 by 120 ft. It is now occupied by the business offices of the telephone company and at the present time work of removing the various down town exchanges into the building is being pushed forward rapidly.

The general contract for the erection of the building was held by the Sound Construction and Engineering Company; the electrical wiring by NePage McKenny; the plumbing and heating by Eckart Plumbing and Heating Company, and the elevator contract by the Otis Elevator Company.

The building was designed by E. V. Cobby, San Francisco architect.

Stockholders of the Utah Construction Company, Ogden, have approved the action of the board of directors in authorizing a bond issue of $1,250,000. The bonds of the company have been subscribed, and the final arrangements for refinancing the company are now being made.

California Mines Are Active

Report of P. G. & E. Shows Large Increase in Mining Load

Considerable activity of late has been noticed in the resumption of the mining industry throughout northern California, particularly in the Mother Lode section. This activity has been encouraged and, in some measure, made possible by the availability of a dependable and adequate power supply at attractive rates.

Mining companies are rapidly becoming convinced of the ultimate economy in utilizing electric power in all their operations, wherever it can be applied in a practical way. Gasoline and steam power are gradually being replaced in this industry by the electric motor, and it is anticipated that, at no distant date, practically all the large mining companies will be operating exclusively by electricity.

As indicating the activities in the mining field, the Pacific Gas and Electric Company has, within the past few months, either made original installations or added to those already being supplied to the following:

Bonanza mine, Moore Mining Co., San Andreas Dredging Co., C. C. Fox, Normandy Mine, American Gold Dredging Co., Milkmain Mine, Evening Star Mine, E. C. Montgomery and Balakala Copper Mining Company. From Tuolumne county come applications for electric service to the following concerns:

Chilano Mine, Chrystalline Mine, Santa Ysabel Mine, Spring Field Tunnel & Development Co., City of San Francisco, Columbus Mine and Buckhorn Mine.

Numerous statistics are available to show that electricity is not only replacing other methods of power in mines, but has proven more economical in operating costs. R. E. Fisher, vice-president in charge of sales of the Pacific Gas and Electric Company, makes the following statement:

"During the year 1920 the average kilowatt-hour rate in the mining industry was 1.123 cents, while our average system rate for the same year was 2.068 cents, showing that the mining industry paid a rate far below the general average over the system."

City Attorney Grant, of Portland, has given an opinion that if overhead wires are dangerous, the city council may order them placed underground, but that such order must not be arbitrary. The opinion was given as the result of a request by residents of a certain section of the city that overhead power lines be placed underground in connection with the improvement of an important thoroughfare.

Report Scores Government Ownership of Utilities

N. E. L. A. Makes Public Findings of Engineers Appointed to Investigate Ontario Hydro Electric Commission's Progress

Government ownership and operation of electric light and power utilities, as exemplified by the Hydro Electric Power Commission of Ontario, is not a success, from the viewpoint of either service or low cost, as compared to privately-owned and publicly-regulated electric light and power companies in the United States and Canada.

This in effect is the outstanding conclusion in a report made to the National Electric Light Association by the engineering firm of Murray and Flood of New York City, and just released for publication by that Association. It is buttressed by a mass of contributory evidence gathered first-hand by the engineering firm in an exhaustive investigation begun on August 22, 1921, and covering the period up to February 10, 1922, when the report was presented.

The report is of particular interest to the West in that at the present time California is planning a similar undertaking in the proposed $500,000,000 Water and Power Act which will be voted upon by the people of the state in the November election. In recent years other western states have considered similar tactics, notably in the case of Washington, where considerable agitation was made to adopt a system of state ownership of utilities in recent years.

The printed report contains more than 225 pages of printed matter and charts. In it the engineers trace the development of the Hydro Electric Power Commission of Ontario since its inception. They compare its growth and operation with the growth and operation of electric public utilities in the Province of Quebec and in sections of the United States, and give comparative and pertinent statistics on the bonded debt, revenue, operating expenses, taxes, wages, etc., of municipally-owned and privately-owned Canadian electric utilities.

The engineering firm making the report is comprised of Mr. W. S. Murray, who conducted the Super-Power Survey on the Atlantic Seaboard between Boston and Washington for the United States Government, and who in addition is conversant with Canadian conditions, having acted in a consulting capacity for municipal and provincial bodies, and Mr. Henry Flood, Jr., formerly Engineer-Secretary of the United States Government Super-Power Survey Organization.

The investigation was made for the purpose of obtaining complete economic data from which to draw a comparison between governmentally-owned and privately-owned utilities. This naturally led to a consideration of the political and economic structure of the Hydro Electric Power Commission of Ontario, which operates the largest government-owned system in existence, and to a comparison between that system and others privately-owned and operated, but subject to public regulation both in the United States and Canada.

In the report Mr. Murray is careful to state that it is not intended to dim the glory of the achievements of the Hydro Electric Power Commission of Ontario, which, he says, has replaced certain unregulated private utilities whose operation was far inferior to it. The principal problem was to determine whether there was anything in the Ontario plan to commend it for application in the United States.

It shows that the service rendered by privately-owned utilities under public regulation is cheaper and better than that rendered by governmentally-owned utilities, and that even in Ontario, which has what is generally looked upon as the most successful example of government-owned utilities, private capital and enterprise have contributed more to the upbuilding of civic, industrial and commercial life than has the government-owned project.

In the summary of conclusions at the front of the report appears the following:

"After careful analysis of the government-owned, controlled and operated electric utility structure as represented in the Hydro Electric Power Commission of Ontario, I am of the opinion, firstly, that the principles of its application can find no place in the United States; secondly, that to attempt the substitution of its principles of control and operation within the United States would be to strike a blow at economic structures, the present existence of which are not only far better equipped to protect the public interests in their conjunctive relation with the public service commissions of the states regulating their rates, but it would also be to strike an equal blow at the shareholders of the electric utilities which are now serving the American public; and, thirdly, that the Hydro Electric Power Commission owes its being only to the fact that a public service commission on the order of those operating in the states was not in existence in the Province of Ontario at the time of its creation."

In support of the above statement the report recites that in order to be superior in kind to that supplied by the privately-owned electric utilities of the United States, power as applied in Ontario from the governmentally-owned and controlled system, in associate relationship with the Hydro Electric Power Commission, must be more adequate, more reliable and cheaper. "The facts show, however, that the electric utilities of the States hold more power in reserve and sell more energy per capita served," says the report, "that, by that token they can claim a greater reliability of supply and that the supply is cheaper to the consumer."

Also in support of the statement of conclusions the report asserts that at the end of the fiscal year 1920, only 23 per cent of the total power plant capacity operated by the Hydro Electric Power Commission was constructed by the Commission, the remainder representing plant capacity constructed at the initiative and risk of private investors and acquired from those investors by the Commission. The report states that in acquiring ownership of it, intangibles such as franchise rights and good-will were included in the purchase price. This intangible cost, therefore, being represented in power "at cost" such intangibles also necessarily would be included in the cost of any governmental plan of like characteristics which might in future be inaugurated in the United States.

"The building of new power plant facilities under the auspices of governmental ownership, as shown in the cases of Nipigon and Chippawa, both in respect to policy and cost, is not to the economic interest of the people," continues the report.

"The advocates of government or municipal ownership of electric utilities claim reduction in the cost of power in virtue of

(a) Elimination of taxes.
(b) Elimination of dividends.
(c) Elimination of high-salaried executives.
(d) More economical wage and higher efficiency in labor scale.

"With regard to (a), taxes are not eliminated. Just as much money in taxes is paid. The difference is in their distribution. In the case of private ownership only the users of service pay the tax bill, while in the case of government-owned utilities all the people pay the bill.

"With regard to (b), (c) and (d), notwithstanding dividends, high-salaried executives and the wage and labor claim, the answer is, when the total operations are summed up, the people receive the power at less cost through private ownership under regulation.

"The investment of capital in electric utilities under private interest control is far better protected from extravagance than when that capital is governmentally-owned, for the reason that plans and estimates for such capital expenditures not only must gain the approval of a trained engineering and managerial staff and an experienced board of directors of the companies, but it also must have the critical review of the banker and the private financial investor. In the case of government-owned utilities, the directing heads are seldom specially trained in the business under their jurisdiction and the value of securities is not based upon the value of the property or the efficiency of the management, but upon the taxing power of the government.

"Arms, legs and body are useless without the head. A high-salaried executive usually saves many times (his salary included) the losses incurred by the cheaper and less efficient executive. Accomplishment by individuals in control of private enterprise is under keener observation than is the case when those in charge are governmental or municipal officers.

"Governmental ownership eliminates all incentive for gain and throttles initiative. This is evidenced by the far greater growth of privately-owned utilities.

"The Hydro Electric Power Commission is the judge of its own acts. A commission cannot fairly be the judge of its own (and others') rights in contentions."

Further in support of the conclusions drawn, the report calls attention to the fact that "honesty of purpose does not necessarily reduce the power bill" but that so far as price is concerned, the structure under which it is administered is what really counts. The report says that American companies in the Niagara district are supplemented by steam power far more than are those on the Canadian side, but that in spite of this increased cost for the benefit of the consumers and the public generally, power is being furnished at a lower cost on the American side than upon the Canadian side under the direction of the Hydro Electric Power Commission.

In discussing the relative value of the governmental structure as represented by the Hydro Electric Power Commission of Ontario, and the regulatory bodies of the several commonwealths of the United States, the report says:

"The Commissions of the States fully realize that protection to the people lies in protection to the electric utilities from which they are receiving power. The authority delegated to them to regulate rates, and the constitutionality of the law standing behind any action on their part, or upon the part of the electric utilities, provides a structure constructively balanced to to do justice to all parties."

San Francisco is becoming the raw hide center of the Pacific Coast, according to steamship agents whose vessels are bringing the hides into coast harbors from the Orient and South America. Recently two vessels brought a total of 74,000 hides into the port from South America in one week.

Denver Industrial Show Visited by 75,000 People

Seventy-five thousand people attended the Industrial Exposition held in the municipal auditorium at Denver, February 20-25. The Colorado Manufacturers' Association took the lead in arranging the exhibition and the results obtained were unusually satisfactory, according to the officers of the organization and the several hundred exhibitors.

The exposition was a revelation to many, to see the extensive range of goods manufactured in Colorado. Although believed by many that the state is a mining and agricultural one, the exposition demonstrated that manufacturing is in the ascendancy and that Colorado has added another potential factor to give it the lead in the Rocky Mountain country.

Everything from perfumes to overalls were displayed at the exposition. Foodstuffs, wearing apparel, toilet articles, mechanical equipment, stationery, electrical material and appliances, and even caskets were shown. In those cases where certain articles were not being manufactured in the state, arrangements were made for "foreign" displays.

The Colorado-Made Goods Club, representing 40,000 women in the state, had its officers and committees working at every session. Their function was to give personal touch to each of the exhibits and to drive home the idea of supporting home industry by buying Colorado-made goods.

Two Denver electrical firms maintained attractive booths. One was that of the J. W. Hancock Electrical Co. displaying its hand-wrought lighting fixtures and Columbalite units, and the other was of the Enterprise Electrical Company, which was responsible for the wiring and electrical displays of the entire exposition. Assisting in the Hancock display was the firm of A. and H. Hosek, Denver manufacturers of wood fibre and polychrome products.

Reports from these firms since the exposition closed indicate that the displays and demonstrations have already resulted in sales of several thousand dollars, ranging from small appliances and portable lamps to complete jobs of house wiring.

The Electrical Cooperative League of Denver assisted the electrical firms with their displays through advertising and personal assistance. S. W. Bishop, the League manager, was in attendance to explain the electrical home which will be opened in that city early in April. Literature explaining the nature of the home and extending an invitation to visit it was passed out to thousands of visitors.

Electrical Home Is Dedicated by Provo, Utah, Electragists

A model electrical home has just been completed in Provo, Utah, and was open to the public from March 1st to 5th, inclusive, during which time a great many interested visitors were in attendance.

The home is located at 450 North University Avenue, and is one of the finest in the city.

Among the features exhibited in the home were the following:

Convenience outlets.

All attachment plugs standardized.

Convenient location of switches.

Outlets on dining room table and tea wagon.

Modern electric kitchen, with electric dishwasher and electric range.

Modern lighting fixtures, wherein glass reflectors were eliminated as much as possible.

Modern laundry room, completely equipped equipped with electrical operation.

Burglar lights on four corners of the house, operated by switches from either front door or bed room.

Convenience outlet placed on the outside of front porch for outdoor lighting or appliance use.

On Thursday, March 2nd, members of the Rocky Mountain Electrical Cooperative League and the Electrical Contractor-Dealers' Association of Salt Lake attended the demonstration of the home. A feature of the program was a luncheon given in honor of these electrical people.

The home is owned by Swen O. Nielson.

The City of Seattle's Skagit River development project offices, formerly located at 116 Cherry Street, Seattle, have been moved to the Alaska Building.

Great Western Power Co. Buys Universal Properties

The Great Western Power Company of San Francisco has purchased outright the name, good will and properties of the Universal Electric and Gas Company of that city for $2,250,000, according to an application filed with the California State Railroad Commission requesting the approval of the purchase. Under the terms of the agreement reached between the two companies, the Universal Company will receive an initial payment of $500,000 immediately and the remainder of the purchase price within ninety days in addition to an amount covering extensions and equipment installed since January 1, 1922.

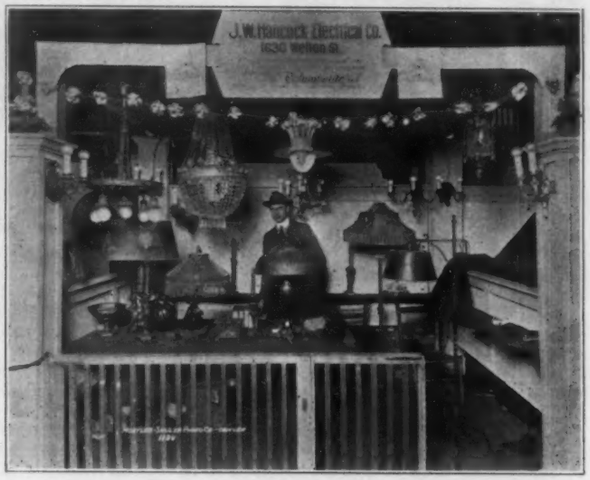
The properties of the Universal Electric and Gas Company include a steam generating plant of heavy capacity, eighty-one miles of primary overhead distribution lines, fifty-three miles of secondary overhead distribution lines, forty-six miles of underground cable and seventy-four miles of underground ducts. It now serves in that city 4250 consumers.

R. J. Spreckels signed the application to the Railroad Commission, as vice-president of the Universal company, together with R. C. Bokee, assistant secretary, and Mortimer Fleishhacker signed for Great Western, as president, together with Chaffee E. Hall, as assistant secretary.

The Great Western guarantees to abide by any outstanding contracts Universal company holds and to indemnify that company for any claims arising prior to March 1. Universal company agrees to practically disband, inasmuch as the contract agreement calls for the Universal company not to engage in any electric or steam business in San Francisco so long as the Great Western continues in business.

The City Electric Company of Albuquerque, N. M., is building a series of residences for the employes of its plants in that city. The homes, which will cost approximately $2000 each, follow what is known as the Roslington Standard, and have been designed to minimize labor and material.

Booth of the Enterprise Electric Company at the recent Denver Industrial Exposition. Harry Arthur, owner of the company, made the electrical installation.



Booth of the J. W. Hancock Electrical Company displaying hand-wrought lighting fixtures, a product manufactured by the Denver firm and having national distribution.

Plans Ready for New Los Angeles 1000 Room, $7,000,000 Hotel

Schultze and Weaver, architects of New York City, have filed plans in Los Angeles for the Biltmore Hotel to be erected at Olive and Fifth streets, facing Pershing Square.

When this hotel is completed it will represent an investment of close to $7,000,000 in property, building, and furnishings. With its fourteen stories of more than one and one-half acres each, it will contain 950 guest rooms and the most elaborate arrangement of lobby and service floors in the West.

Approximately 6,000 tons of structural steel will enter into the construction of this building. The electrical equipment of the hotel is estimated to cost $500,000 including elevators, ventilating apparatus, refrigeration machinery, wiring and other electrical devices.

Seattle Offers Off-Peak Power at Decreased Rates

Three industrial power rates for the Seattle light department were recently recommended by Superintendent of Lighting J. D. Ross. These would be for power supplied during the peak load, or greatest evening demand, off-peak power, and waste power. The city council has under consideration an ordinance providing for reduced rate for manufacturing plants during off-peak hours. Mr. Ross states there is also waste power available, which could be disposed of at a still lower rate, this waste power being produced by water going over the spillway at Cedar Falls, in addition to the supply of peak and off-peak current. Councilman William Hickman Moore estimates the amount of waste totals at least 25,000,000 kilowatt-hours a year.

Stations to Study Stream Flow of Colorado River

The necessity of accurate figures relative to the stream flow of the Colorado River before any serious consideration can be given to any of the major projects which have been proposd, not only for irrigation and power purposes but also for flood control, has caused the U. S. Geological Survey to establish twelve base gaging stations, six on the main river and six on the tributaries. In addition to these base stations secondary stations will later be established for the solution of special problems.

The base stations on the main river are at Topock, Yuma, Boulder Canyon, Bright Angel, Lees Ferry and Cisco. The stations on the tributary streams are on the Green, San Juan, Little Colorado, Virgon, Williams and Gila.

The city council of Seattle plans to build in Seattle, or near that city, the 200 new light-weight street cars proposed for the municipal railway lines, to replace the present heavy cars in use. The car construction will involve an expenditure of $3,000,000, and the council plans to construct at a local plant everything but the motor equipment, which will be purchased in the East. A formal offer has been submitted by the Pacific Car and Foundry Company of Renton to construct the cars at cost, plus 10%, and the city utilities committee is considering this offer.

New Line Extension Rules in Effect in Oregon

Public Service Commission Issues Orders Governing Extensions in Urban Districts to Bring About Uniform Policy

An order governing line extensions in urban districts has been issued by the Public Service Commission of Oregon, in order that there will be a uniform policy governing line extensions by all electric utilities in the state. Urban extensions are defined by the commission as including all additions to distribution systems built primarily to serve consumers located within the corporate limits of cities or villages or other territory which has a character and density of population generally similar to urban conditions. The cost of construction, the ruling states, shall include all labor, material, and other expense for the distribution and installation of poles, wire, cross-arms, insulators, line hardware, excluding services.

The report holds that services, meters and transformers and the cost of the installation thereof shall be supplied by the utility and cost of same shall not be included in the "actual construction cost." If it is necessary to overbuild existing secondary lines with primary lines or to increase present capacity of either primary or secondary circuits leading up to the new construction, such additional cost shall not be considered as a cost of extension and shall be borne by the utility. The utility shall finance and construct any extension requiring one span of wires at standard spacing for each individual applicant and where more than one span is required the utility shall spend not less than $60.00 per individual applicant.

If an extension above the free limit is required, the utility will be required to finance and construct the entire extension, and for that portion of the cost of the extension above the free limit, may require the consumer or group of consumers to pay, in advance, an amount which will produce, in the form of an annuity, a sum sufficient to provide the carrying charges upon the additional investment during the development period. The annuity shall be computed at an interest rate of not less than 6 per cent. The carrying charges consist of maintenance, depreciation, taxes and return. The maintenance, depreciation and taxes shall be based on the actual operating costs as charged by the utility on similar construction. The percentage of return shall be equivalent to that obtained from the utility property as a whole. Such excess extension shall be considered to have a mean effective development period of five years.

If conditions make it doubtful whether the business derived from an extension and the utility and the prospective consumer or consumers are unable to adjust the basis upon which the extension will be made, the matter may be submitted to the Commission for investigation and determination as to the reasonableness of such extension. This shall not be construed as permitting the utility to allow additional applicants to be attached to any extension within the period of three years without such additional applicants first paying the consumer or consumers therefore making advance payments on account of excess cost of the extension, a pro rata share of such advance payments, or obtaining a written waiver in lieu thereof.

The order further provides that an extension must be constructed at actual cost, and that if the actual cost is less than the estimated cost a pro rata refund must be made, or if the actual cost exceeds the estimated cost the utility shall have the right to collect the additional cost pro rata from the consumer or consumers served by the extension. All equipment installed by the utility shall remain its sole property.

This ruling is the outcome of a desire on the part of the Commission and the utilities of the state to have formulated a standard and uniform set of rules to govern line extensions, and while it is not clear in some respects, it will no doubt prove far better than the method of each utility to a large extent making its own line extension policy, which was the practice before this order was handed down.

State Commission Issues Drastic Order in L. A. Telephone Case

An order believed to be unprecedented in its drastic features has been issued by the California State Railroad Commission in conjunction with the Los Angeles telephone situation. The order, which is directed to the Pacific Telephone and Telegraph Company, briefly requires that the company make refunds for lapsed service under the schedule for which the entire month's telephone bill is refunded if the service failure exceeds fourteen days; that the company complete construction and give normal service in certain districts within a specified time limit and that George E. MacFarland, president of the parent company, proceed to Los Angeles and remain in charge of the entire program until further order of the commission.

No changes were made in the rate schedule set last December, although the rehearing of the case had been asked by Los Angeles and Pasadena for this purpose.

During the hearing it developed that at the end of February the company had a total of 12,000 delayed installations for the Los Angeles exchanges alone. The increase in the number of orders estimated for 1922 was placed at 35,000 as well as 25,000 other orders for number changes.

The failure on the part of the telephone company to maintain adequate service is blamed upon the enormous growth of the southern California metropolis during the past few years.

Complete rejection of the proposal to bridge Lake Washington by means of utilizing fifteen wooden hulls from shipping board craft moored in Lake Union, has been announced by the King County Commissioner. Construction of roads at a cost of $575,000 would be necessary to open the bridge for travel, declared the commissioners. The annual upkeep would be $50,000 a year, and the life of the bridge a doubtful question, they state.

McGraw-Hill Co. Buys Mining and Scientific Press

Mining and Scientific Press, a technical publication published for the past sixty-two years in San Francisco, has been purchased by the McGraw-Hill Company, Inc., of New York and will be consolidated with the Engineering and Mining Journal, the new weekly to be known as the Engineering and Mining Journal-Press. The Journal-Press will be published in New York. In order to give western mining men a strictly sectional service, there will be published in San Francisco a monthly supplement to the Journal-Press to be known as the Pacific Mining News, which will be distributed in conjunction with the New York publication to subscribers in the western district. The addition to the technical fold of the McGraw-Hill publications is the fourteenth to be issued by this company.

Philadelphia Concern Purchases Pelton Water Wheel Co.

The plant and interests of the Pelton Water Wheel Company of San Francisco and New York, manufacturers of high head impulse water wheels, have been purchased by the William Cramp and Sons Ship and Engine Building Company of Philadelphia. The purchase of the San Francisco concern has resulted in one of the largest mergers of manufacturers of hydraulic equipment in the history of hydroelectric development, as the Cramp interests already control the I. P. Morris hydraulic turbine interests.

The Pelton Water Wheel Company will continue under the old corporate name and will become a department of the Cramp interests. H. B. Taylor, vice-president of the William Cramp and Sons Ship and Engine Building Corporation, will be president of the Pelton Company; Ely C. Hutchinson, formerly chief engineer of the San Francisco company, will be vice-president and general manager and William M. Moody will be second vice-president.

In a statement announcing the sale Mr. Hutchinson says:

"Under the new arrangement, the facilities and experience of The William Cramp and Sons Ship and Engine Building Company combined with Pelton will be available, and will enable them to continue to a greater extent than ever before the policy of maximum Pelton service to the power companies and users of Pelton apparatus both here and abroad."

Los Angeles Buys Power Company Distribution System

The California State Railroad Commission has been asked to approve the final agreement between the Southern California Edison Company and the city of Los Angeles whereby the municipality takes over the distribution lines of the power company within the city limits for a consideration of $11,000,000 plus the cost of extensions and betterments made since May 26, 1919, when the agreement was formulated. Litigation in the courts over the issuance and sale of bonds covering the purchase price has held up the taking over of the system until the present time.

The agreement provides for the preferred purchase and sale of power between the parties concerned, and while the power company retires from the city, the latter agrees to protect the Edison Company from competition outside the city limits. Power will be purchased and sold at rates set by the Railroad Commission.

The Southern California Edison Company has issued the following statement regarding the sale:

"That the city of Los Angeles has constructed and owns certain hydroelectric generating plants as a part of its Owens River aqueduct system; that said city through its charter has been and is committed to the policy of retail distribution of the electric energy produced by its generating plants; that at the time the purchase agreement was entered into, the city had constructed certain distributing lines within the city, and was proposing to construct a complete system to serve the entire city at retail, paralleling the company's lines, unless the city could acquire the company's power system for distribution purposes; that the purchase agreement was negotiated through the informal offices of the Railroad Commission as a settlement of existing and threatened future controversy between the city and the company over said matter; that under the terms of said settlement as expressed in the purchase agreement, the company is to retire from the retail field within the city, and is to have the exclusive right and assumes the duty of supplying to the city at wholesale such amounts of electric energy as the city shall need in excess of the production of its own plants, while the city is to protect the company against competition by the city in territory outside the city limits, by giving the company the first right to purchase any surplus energy the city may produce in excess of the amount required to supply its own uses, and to supply consumers within the city; that the consummation and observance of the settlement effected by the purchase agreement will avoid economic loss to the company which might result from competition with the city, both inside and outside the city limits, and is for the benefit of the public service."

S. F. Calls For Bids on Hetch-Hetchy Project Plant

Recommendation was made to the board of public works recently by City Engineer O'Shaughnessy that bids be advertised for the installation of equipment in the Moccasin creek power plant of the Hetch-Hetchy project in Tuolumne county. The contract, which is the largest to be let so far on the project, involves approximately $1,000,000, and will be opened to bidders April 12.

The Moccasin creek plant will be the first of several large hydroelectric power installations, which will utilize the water flowing into the Hetch-Hetchy aqueduct, about forty miles from Oakdale. It is expected that the equipment contracts will be passed on by the end of April and that work of installation will be finished within a few months.

The contracts call for the erection of four of the largest electric generators ever utilized in this section of the country; four impulse water wheels capable of 240 revolutions per minute and of generating 25,000 horsepower per unit; and of eight thirty-six-inch valves.

The Moccasin creek hydroelectric unit is to be an adjunct to the Hetch-Hetchy water supply system, which is to ultimately supply 400 million gallons of water to the San Francisco metropolitan district. The source of supply will be the upper portion of the Tuolumne river watershed within Yosemite National Park.

The McGraw-Hill Industrial Letter, a 12-page bulletin issued monthly as a special service to advertising agencies, inaugurated in January, 1921, is to be mailed in the future to all subscribers to Crain's Market Data Book, as well as to sales and advertising executives in the various industries, who desire this service.

Books and Bulletins

PROTECTIVE RELAYS

By VICTOR H. TODD, designing and manufacturing engineer, Westinghouse Electric and Manufacturing Company. 8¼ by 6 inches. 274 pages. 244 charts, diagrams and illustrations. McGraw-Hill Book Company, New York.

The need of a text book on the theory and application of relays for the protection of station and generating station apparatus and distribution and transmission lines has long been felt by those engaged in the engineering design and application of protective relay systems. With the large growth in power capacity of transmission systems, the use of the most carefully worked out designs of protective relay systems has become imperative. In his book Mr. Todd has made the first attempt to cover this subject from the first principles of protective relays to the protection of high tension, interconnected networks, the object being to make the work of value not only to the operator and tester who have a fair knowledge of electricity and are seeking more information, but also to the designers of the systems who may find many points not previously taken into consideration in calculation.

A more thorough establishment of the fundamentals upon which protective relay systems must be based could have been included in the work with marked advantage. The installation of protective relays must be made upon logical lines which are fundamentally sound, and an exposition of these fundamentals would have done much to clarify the situation.

Although the book admirably catalogs the protective relays on the market and presents many arguments in favor of their use, but little actual data from practical installations is given. Descriptions of particular installations giving the exact settings of all of the relays, the timing, the actual current from tests of short circuits, and even such details as the sizes of wires used in the connections and their lengths would be of material value to engineers actively engaged in protective engineering.

G. E. ARMSTRONG.
Pacific Coast Editor,
Electrical World.

The Engineering Foundation has published a report of the seventh year of its activities in research connected with the various phases of engineering. The book will also contain an abridged report of the extensive investigation of the fatigue phenomena of metals, carried on by the engineering department of the University of Illinois, made possible in a large measure by a large contribution from the foundation. Copies of the report may be received by addressing the Engineering Foundation, Engineering Societies Building, New York City.

The greatest per capita use of electricity of any city in the United States is claimed for Bend, Oregon, by the Bend Water Light and Power Company.

Meetings of Interest to Western Men

California Cooperative Campaign Announces 1922 Plans

Education of the public in the broader uses of electricity, first for domestic purposes and second, for industry, the education of the members of the electrical industry in the efficiency and broad uses of electrical heating, are the major purposes set down in the program of activities for the California Electrical Cooperative Campaign for 1922, as announced at the meeting of the advisory committee of the organization, held in San Francisco on February 24.

The public educational campaign will take the form of an intensive campaign among clubs, industrial and semi-technical organizations and schools and colleges. Industrial films, lectures and displays will be the chief method of spreading this information.

In educating the electrical industry in electrical heating, group meetings will be held in various parts of the state, including an "Electric Heating Day" before the Los Angeles Electric Club and the San Francisco Electrical Development League.

In its plan for closer cooperation with the contractor-dealer, the advisory committee will distribute copies of the revised wiring diagram for an electrical home to the contractors free of charge, provided they will assume the responsibility of distributing the charts to prospective builders. The wiring plans will also be placed in the hands of architects, building contractors and realtors by the campaign's field men. The campaign has also gotten out a convenience outlet display card which will be distributed in the same manner.

It was announced at the meeting that a bungalow type electrical home is now under construction in Oakland and will be ready for display during the middle of the summer.

The next meeting of the campaign will be held in Los Angeles, March 31 and April 1.

The Hydro-Electric League of Oregon has been organized as a successor to the Columbia Hydro-Electric League, according to announcement by George L. Cleaver, secretary. The Columbia Hydro-Electric League claims the distinction of having originated the 1925 exposition idea.

Civil Engineers to Hold Autumn Meeting in San Francisco

At a meeting of the Board of Directors of the American Society of Civil Engineers held in New York City recently, it was decided to hold the autumn meeting, not only of the Board of Direction, but of the entire Society, in San Francisco on October 18, 19 and 20, 1922. The meeting will be devoted to a Symposium on Water Power. After a two-day session devoted to technical papers and discussions, an excursion will be made to one of the power projects in the Sierra Nevada Mountains. San Francisco is represented on the directorate of the Society by Walter L. Huber, director for Northern California and Nevada; also by C. E. Grunsky, who was elected vice-president at the January meeting. George G. Anderson, director from Southern California, also offered much valuable cooperation in securing this meeting for San Francisco.

The Seattle branch of the Pacific States Electric Company on March 1 entertained as its guests members of the Seattle Electrical Association, who were addressed by J. D. Barnhill of Evans and Barnhill, Inc., San Francisco and New York, and D. E. Harris, vice-president and sales manager, Pacific States Electric Company, San Francisco. During the week of March 1, under the auspices of the Pacific States Electric Company, group meetings were held in Seattle to which were invited men of the electrical fraternity in that city.

At the regular monthly meeting of the Utah chapter of the American Institute of Electrical Engineers, held in Salt Lake on February 24th, an interesting address was delivered by C. C. Pratt, division chief of the Mountain States Telephone and Telegraph Company, on the subject of "Wireless on Wire Lines." Mr. Pratt discussed the carrier current system, which is used by the telephone company. Charts were used by the speaker to illustrate the points discussed. Following the lecture the members and visitors in attendance at the meeting went to the telephone plant, where they were taken on an inspection trip as the guests of Mr. Pratt.

COMING EVENTS

NORTHWEST ELECTRIC LIGHT AND POWER ASSOCIATION
Annual Convention—Boise—June 7-10, 1922

PACIFIC COAST ELECTRICAL ASSOCIATION, AFFILIATED WITH N. E. L. A.
Annual Meeting—Los Angeles, May 31-June 2, 1922

AMERICAN ELECTROCHEMICAL SOCIETY
Spring Meeting—Baltimore—April 27-29, 1922

OREGON ASSOCIATION OF ELECTRICAL CONTRACTORS AND DEALERS
Mid-winter Convention—Corvallis—March 30 and 31, 1922

University Extension Division Offers Electrical Course

The University of California Extension Division has announced the first of a series of nine successive courses of fifteen lessons each on "Direct and Alternating Current Electricity." The classes will be given on Tuesday and Friday evenings by Arthur L. Jordan at the San Francisco Polytechnic High School, beginning March 31. The courses will begin with the elements of the subject and carry the student through successive steps of instruction covering fundamental principles, numerical problems with the mathematics necessary for their solution, and experiments with practical machines. Those in the San Francisco district wishing to enroll are asked to apply at 140 Kearny street or at 264 Pacific Building.

Denver Contractor-Dealers Elect Officers

The Denver Association of Electrical Contractors and Dealers held its annual election of officers at its last monthly meeting, February 3. Clarence Keeler of the Denver Gas and Electric Light Company was elected president to succeed E. C. Headrick, who was recently made chairman of the Denver Electrical Cooperative League.

John Van Dyk of the Premier Electric Distributing Company was made vice-chairman, and R. S. Willoughby of the Silver State Electric Company was re-elected treasurer. It was announced that the standing committees would be appointed by the president some time during the month.

On March 3, the Seattle Electrical Association entertained as its guest Laurence Davis, a special representative of the National Electrical Contractors and Dealers' Association, at a meeting held at the Masonic Club. The meeting was attended by members of the Seattle Association, of the Seattle Builders' Association and of the Washington state chapter, American Institute of Architects. Dean Stephen I. Miller, Jr., of the faculty of the University of Washington, who is secretary-manager of the Northwest Electrical Service League, also delivered an address.

A budget requiring an expenditure of $4,000 for the national convention of the American Association of Engineers, to be held in Salt Lake City June 5, 6 and 7, has been decided upon by the convention committee. The money has been appropriated and the different committees instructed to allow no delay in the preparations for the convention. The plans for entertainment include a course of education for the visitors to acquaint them with the scenery of Utah.

The establishment of an experimental fruit canning laboratory at the University of California under the direct supervision of the department of agriculture is urged in a resolution adopted by the Canners' League of California at a recent annual meeting held in San Francisco. Experimental and research work which would be of immense value to the fruit canners could be done in such a laboratory, the resolution pointed out.

Personals

K. E. Van Kuran, Los Angeles district manager for the Westinghouse Electric and Manufacturing Company, has been chosen to head the Los Angeles Electric Club throughout the coming year. One of the outstanding figures from the manufacturers' group of the electrical industry in the West, Mr. Van Kuran has been actively identified in every movement for the benefit of this industry. He was one of the pioneers in the organization of the California Electrical Cooperative League and is at the present time a member of the advisory committee of that organization. He has been actively engaged in the affairs of the N. E. L. A., and has taken a prominent part in the various departmental and district meetings held by Westinghouse executives in the West.

K. E. VAN KURAN

L. T. Merwin, general manager of the Northwestern Electric Company of Portland, is a recent San Francisco visitor.

Colonel H. M. Byllesby, head of the Byllesby power company interests, recently made an extensive inspection of the properties of the San Diego Consolidated Gas and Electric Company, one of the Byllesby subsidiaries.

F. R. Davis, of the advertising department of the General Electric Company, will shortly make an extended visit to the Pacific Coast for the purpose of investigating western market centers and of visiting the various offices of his company in this district.

Durbin Van Law, prominent ex-service man and electrical engineer of Denver, has been recommended by Senators Phipps and Nicholson of Colorado as manager of the U. S. Veterans' Bureau in the eleventh district comprising the states of Wyoming, Utah, New Mexico and Colorado. Mr. Van Law served as a captain of engineers in the army and has served as a consulting engineer since his discharge.

Carl Heintz, special merchandising representative for the Westinghouse Electric and Manufacturing Company in the West, is temporarily established at the San Francisco office of the company while engaged in special promotion work in this district.

John J. Cooper, general manager of the Mountain Electric Company of Denver, has been appointed on a committee to place a valuation on the lighting plant at Meeker, Colorado.

Dr. J. A. L. Waddell, American consulting engineer and world authority on bridge construction, has been awarded the Second Class Order of Merit of the Sacred Treasure, by the Emperor of Japan in recognition of his services in the promotion of engineering in the Nipponese empire. Forty years ago Dr. Waddell was an engineering professor in the Imperial University of Tokyo and rendered valuable service to Japan in connection with the founding of the engineering department of the university. This is the second decoration to be awarded to the American engineer by Japan.

Mitsuichi Ohshima, hydraulic engineer of the Shinyetsu Electric Power Company, Tokyo, has recently completed an extensive tour of practically every large hydroelectric project in California, preliminary to visiting eastern manufacturing centers in the interests of his company. His investigations into American hydroelectric development are being made preparatory to the undertaking a ten million dollar extension program which his company has planned with a view of increasing the power supply of the city of Tokyo.

Ronald T. Strong, formerly connected with the electrical industry in the West, has been appointed local representative for the Westinghouse Electric and Manufacturing Company at Hammond, Ind., where he is handling the interests of that company in the steel mills, the car building plants and other factories in the Calumet industrial district.

R. E. Fisher, manager of the commercial department of the Pacific Gas and Electric Company, has been appointed chairman of the committee of the San Francisco Electrical Development League which will represent the organization before the San Francisco Chamber of Commerce. Other members of the committee are E. O. Shreve, local manager of the General Electric Company, Robert Sibley, editor of the Journal of Electricity and Western Industry, T. D. MacMullen, secretary and sales manager of the Majestic Electric Development Company, C. L. Chamblin, general manager of the California Electrical Construction Company, and R. A. Balzari, president of the League and industrial manager of the San Francisco office of the Westinghouse Electric and Manufacturing Company.

S. L. Case, of the engineering department, Westinghouse Electric and Manufacturing Company, has been spending some time in southern California studying the conditions under which the proposed 220,000-volt lines will operate. As insulator specialist for his company, Mr. Case looks forward to the operation of still higher potentials in long distance transmission work with the assurance that most of the flash-over troubles have been eliminated and the limit in voltages is still undetermined.

J. L. Kendall, of Pittsburg, one of the owners of the Douglas County Light and Water Company, recently made an inspection of the company's holdings in Roseburg, Oregon.

Harry Chandler, publisher of the Los Angeles Times, has been chosen as the most useful citizen in the southern California metropolis by the citizens' committee of the Realty Board, which for the past few years has made such a selection. It will be remembered that Mr. Chandler's activities as a "Builder of the West" were recently set forth in the Journal of Electricity and Western Industry.

Arthur Kempston, field representative for the California Electrical Cooperative Campaign, has resigned from that position to become San Francisco industrial sales representative for the Electric Railway and Manufacturers' Supply Company. Mr. Kempston has been connected with the Campaign since September, 1921, handling the territory in the San Joaquin and Sacramento valleys between Chico and Bakersfield. During his connection with the cooperative movement he played an active part in bringing about a closer relationship between the various branches of the industry in the territory which he covered.

R. E. Caldwell, state engineer of Utah, and member from Utah of the Colorado River commission, addressed the weekly luncheon of the Utah Society of Engineers at the Newhouse hotel in Salt Lake City on February 27. Mr. Caldwell explained the reasons for the formation of the commission, detailed some of its problems and told what it hoped to accomplish.

Edward C. Portman, Jr., has been appointed manager of advertising service of the Journal of Electricity and Western Industry. He was formerly engaged in advertising and sales work in Chicago and Grand Rapids, Michigan, and recently resigned as San Francisco Supervisor of the U. S. Veterans' Bureau, where he was active in promoting the rehabilitation of disabled veterans of the World War. He is a graduate of the College of Commerce of the University of Wisconsin. During the World War he served as a first lieutenant in the field artillery. His work with the Journal of Electricity and Western Industry will consist in aiding advertisers in surveying western markets and in promoting campaigns, a distinct service afforded by this publication.

E. C. PORTMAN, JR.

Henry Harnischfeger, president of Pawling and Harnischfeger, Milwaukee manufacturers of electrical material handling equipment, recently passed through the West en route to the Orient where he will visit the various branch offices of his company and allied companies. He will spend some time in Europe before returning to the United States. He was accompanied by Mrs. Harnischfeger.

Stephen I. Miller, Jr., secretary-manager of the Northwest Electrical Service League, and **W. D. Moriarity,** field service man of the same organization, addressed approximately thirty Seattle electrical jobber's salesmen at a lunch recently held under the auspices of the League.

P. C. Stone, formerly with the firm of Renard-Stary, Los Angeles, has joined the appliance sales department of the Illinois Electric Company. His friends on the Pacific Coast will remember him as one of the most aggressive sales representatives in the appliance business.

E. C. Headrick, one of the most prominent of the Denver electragists, has been elected chairman of the Advisory Committee of the Denver Electrical Cooperative League to succeed T. O. Kennedy, who recently resigned following his transfer to the Middle West. Mr. Headrick started his electrical career under the direct supervision of George Westinghouse in 1888 when he entered that great engineer's private laboratory. In 1900 he was sent to France as the special representative of the Westinghouse Company. Upon his return he accepted the post of assistant shop superintendent of the power apparatus department of the Western Electric Company in Chicago. He came to Denver in 1909 and opened a contractor-dealer establishment, specializing in the handling of motors and heavy duty equipment. For the past three years he has served as president

E. C. HEADRICK

of the Denver Association of Electrical Contractors and Dealers and was one of those instrumental in the organization of the Cooperative League. He takes charge of the activities of his organization at a period when it is launching its first Electrical Home and is planning to extend its scope to take in the entire state of Colorado together with portions of Wyoming, Arizona and New Mexico.

K. B. Miller of Mansfield, Ohio, one of the directors and stockholders of the Bend (Oregon) Water Light & Power Company, recently made an inspection of the company's properties in Eastern Oregon.

J. C. Thirwall, of the railway and traction engineering department of the General Electric Company, has been spending several weeks in the West gathering information on the probable future requirements of traction companies in the large western cities. The rapid growth of many sections of the West will necessitate the expenditure of large sums of money for the betterment of transportation facilities during the coming year.

J. B. Norcross of Denver has been appointed commercial manager of the mountain division of the Western Union Telegraph Company.

David P. Mason, forest engineer of Portland, is a recent San Francisco visitor. Mr. Mason is at present engaged in forest appraisal work for various large Pacific Coast lumber companies.

J. I. Colwell, Seattle district manager for the Western Electric Company, has been named a member of the executive committee of the Seattle Chamber of Commerce's industrial bureau for the year 1922, an example of the part being played by the men in the electrical industry in the industrial upbuilding of the West.

A. G. Dumbleton, Tacoma consulting engineer, has been chosen by the city to investigate several sites for a municipally owned power plant.

Captain Addison N. Clark, identified with the electrical industry in California for several years prior to 1919 and since that time, sales promotion manager for the Edison Phonograph, Ltd., on the Pacific Coast, has become affiliated with **Carl H. Heilbron** in the Southern Electrical Company of San Diego. It will be remembered that Captain Clark was assistant engineer in the electrification of the Southern Pacific Company's east bay suburban lines and was later resident engineer for the San Francisco, Napa and Calistoga Electric Railway. During the World War he was railway regulating engineer on the Verdun sector.

Guy W. Talbot, president, **L. A. McArthur,** general manager, and **H. H. Schoolfield,** chief engineer of the Pacific Power and Light Company of Portland, are recent San Francisco visitors. Their trip was concerned with central station business.

Clare N. Stannard, commercial manager of the Denver Gas and Electric Light Company, has been elected president of The Electrical Home Building Company as successor to W. J. Barker.

Irving B. Lincoln, until recently field service man and publicity director of the Northwest Electrical Service League working in the Oregon field with headquarters in Portland, is now identified with the Seattle offices of the League, in the Central Building. He replaces **R. G. Emerson** who was transferred to Portland.

F. F. McCammon, vice-chairman of the Denver Electrical Cooperative League and power sales engineer of the Denver Gas and Electric Light Company, is attending the N. E. L. A. Industrial Heating School at Mansfield, Ohio.

R. B. Walls, owner of the Peninsula Electric Company of Portland, has recently been elected chairman of the first district of the Oregon Association of Electrical Contractors and Dealers, which includes the city of Portland. He began his electrical career in 1901 when he entered the employ of the Pacific Telephone and Telegraph Company and when he left in 1917 to enter the World War as a first lieutenant in the Coast Artillery Corps, he was manager and

R. B. WALLS

wire chief at Tillamook, Oregon. Following the Armistice, he organized the Peninsula Electric Company and has been one of the most active figures in the affairs of the contractor-dealers. He is also actively identified with the Northwest Electrical Service League. His slogan is "100 per cent membership in the association by the end of 1922."

John Van Dyk and **John T. Hughes,** two Denver electrical men, are building new homes which will be small "model" electrical homes.

Obituary

Lyman A. Scovil, one of the foremost electrical engineers in the country, died at his home in Pasadena recently. He attained international fame when he designed and supervised the electrical installation at the World's Columbian Exposition in Chicago in 1893. He had been head of several Chicago manufacturing concerns and for many years was identified with electric railway construction in the Middle West. He retired from active participation in the electrical industry several years ago. His death will be mourned by the electrical industry of the entire nation.

G. Harold Powell, general manager of the California Fruit Growers' Exchange, died recently in Pasadena. He attained international fame during the World War as an organizer and executive for the Food Administration and has been known as one of the fathers of the cooperative marketing movement. He is credited with saying, "The basis of the cooperative movement is men. Capital can not cooperate; products can not cooperate; only men can cooperate." The industries of the entire nation will suffer from his loss.

The Central Electric Company has been opened in Denver by Ernest V. Beck, formerly connected with several large jobbing houses in that city.

The Bryant Electric Company, Bridgeport, Conn., is introducing to the trade a new appliance switch plug. The plug is designed to fit practically all makes of heating appliances and includes in its features a toggle switch mechanism and self adjusting springs to maintain a tight connection.

The Benjamin Electric Manufacturing Company, Chicago, has issued Bulletin No. 19 illustrating and describing Benox interchangeable wiring devices for suspending industrial and commercial lighting units. The bulletin is an unusual contribution to the art of commercial and industrial wiring.

The F. W. Wakefield Brass Company, Vermilion, Ohio, manufacturers of "Red Spot" lighting equipment, has placed on the market a decorated hanger which is designed to take any of the popular urn-shaped glassware. This hanger is made for either the suspension or ceiling types.

The Cutler-Hammer Manufacturing Company, Milwaukee, has announced the perfection of a new type of electrically operated bulletin machine for the use of newspapers and such agencies. The machine is remotely controlled by a standard typewriter keyboard and prints the bulletins at the rate of one word per second.

The Electric Materials Company has just secured the services of **E. R. Kauffman** who will have complete charge of selling Bates Expanded Steel Poles, throughout the western territory covered by the company. Mr. Kauffman has specialized for a number of years in the engineering problems incident to the manufacture and installation of Bates poles and has only recently returned from Japan, where he spent a year supervising the construction of transmission lines using this material.

Hendrie and Bolthoff, one of the largest Denver jobbers, in its monthly "Bulletin" for March, a house organ which is distributed throughout the Rocky Mountain region, devoted an entire page to the Electrical Home which will shortly be opened for display in Denver by the Electrical Cooperative League of that city.

The Economee Rheostatic Switch Company, Philadelphia, has issued a circular describing the new type rheostatic switches which have recently been perfected. The switch is adaptable to either lighting or power circuits and applies the current gradually by means of an automatically controlled timing device which can only be changed by adjustment. Sudden applications of current are eliminated as a result and the life of the lamps or motor extended.

The Golden State Electric Company, Los Angeles, moved into the new quarters at 826 So. Flower Street and celebrated the opening with a reception and special entertainment on February 15. The show rooms on the first floor are among the most attractive in the entire city. Executive offices are on the second floor. This progressive firm is now able to handle a much greater volume of business to better advantage as the new building provides accommodations for three times as much sales space as the former location.

Manufacturer, Dealer, and Jobber Activities

James S. Cowen has reorganized the Kyle Electric Company at 226 No. Union Avenue, Pueblo, Colo.

C. J. Hayworth has opened a contractor-dealer establishment on Main street at Eureka, Utah. He has announced that he will engage in all forms of contracting, the sale and repair of electrical appliances and auto ignition repairs.

L. A. Herdti and **R. S. Folland** have purchased the Ogden Electric Supply Company at Ogden, Utah. The store is one of the largest contractor-dealer establishments in Ogden and occupies two stories and the basement of the building at 2430 Washington street. Mr. Herdti has been elected president and general manager of the concern.

The Apex Electrical Distributing Company, Cleveland, announces that 130 salesmen for Apex cleaners and Rotarex washers and ironers won cash awards in the first lap of the annual Spring sales contest. The number of salesmen who competed was slightly over six hundred. The contest, which will have four laps in all, is now in the second lap.

The National Electric Service Corporation has been organized in Denver through the consolidation of a number of smaller concerns, including the Hull Signal Electric Company, the Selector Telephone Company and others. Preparations are being made for the construction of a factory for the manufacture of a number of standard electrical appliances. The incorporators of the new firm include Edwin Scorb, R. W. Taggart, Clay Munson, G. B. Suter and H. B. Seboldt.

The Wonder Electric Manufacturing Company has been organized in Portland, Oregon, and has taken over quarters at Twenty-fourth and York streets where it will engage in the manufacture of standard electric appliances including a commercial and domestic type waffle iron. **John W. Henry** is president of the new company. Its offices are located in the Chamber of Commerce Building.

Louis Ross, San Francisco civil engineer, has placed on the market the Ross Rapid Computer, adapted for office workers as well as engineers. It is an all-metal, circular competer, built like a transit and operates on the polyphase-duplex principle, but with simplified scales. The device is 5 inches in diameter, is provided with a desk clamp and magnifier and arranged to be carried in the pocket in a leather case. It is made and marketed by the Computer Manufacturing Company, 340 Sansome street, San Francisco.

C. E. Ingalls, manufacturers' representative of San Francisco, has recently completed an extended tour throughout eastern manufacturing centers. He has announced that he has been appointed district representative for the Philadelphia Electrical and Manufacturing Company and the Electric Power Equipment Company of Philadelphia. He has recently taken new offices in the Rialto Building.

The L and P Electric Company has been organized at Lamar, Colo., by H. B. Lee and G. C. Pyle.

C. W. McNeill and **William Gaunt** have established a contractor-dealer business to be known as the Liberty Electric Company at 322 No. Santa Fe Ave., Pueblo, Colo.

Magicoal Electric Fires, giving the effect of a living coal fire at the cost of operating a single electric lamp, has recently been added to the lines carried by the **Electric Materials Company,** San Francisco. Designed in Europe and used extensively in England and on the continent, the product has just been introduced into this country. The device can be installed in any coal grate or supplied already installed. It combines the comfort and cheerfulness of a coal fire, without any of the discomforts, with the cleanliness of electricity.

The Arrow Electric Company, Hartford, Conn., has designed a new type of fixture plug to be known as the convenience plug. One of its features is its unusual length which provides a solution to the problem of connecting an electrical appliance to a socket equipped with a glass shade.

M. C. Morrow, assistant sales manager of the Westinghouse Electric Products Company, Mansfield, Ohio, is visiting the various cities of the Pacific Coast investigating the market for his company's products on this coast.

WHAT HAS THIS GOT TO DO WITH THE PRICE OF LAMPS?

On the other hand if the truth were out, we would wager that the price of lamps is farthest from the minds of these earnest gentlemen. The tall jobber on the left—all jobbers should be tall and slender from the over-effects of golfing—is Charlie Listenwalter of Listenwalter and Gough, Los Angeles. His compatriot who is filling his pipe with that vile stuff which masquerades under the label of "The Durham Cow's Husband," is J. A. Vandegrift, sales manager of the National Lamp Works, Oakland. Pebble Beach was the setting for this little one act play.

Business Outlook in Western Market Centers

Reflecting the Trend of Community Thought on Conditions and Events Affecting Business and Industrial Activities Throughout the West

Compiled and edited for the Journal of Electricity and Western Industry by correspondents in all principal Western cities.

SAN FRANCISCO

Reports from the California Almond Growers' Exchange show that almond growers of California received approximately six million dollars of the $362,600,000 estimated to have been received by the agriculturists of that state during 1921.

There has been a good rainfall throughout the northern part of the state and growing conditions in deciduous fruits are excellent. Grass has abundant growth and livestock is in good condition.

The bond and investment market has displayed continued strength and many new issues have been absorbed.

There has been little activity in residence building but commercial structures, repairs and alterations continue apace. The unemployment situation has abated somewhat due to demand for both skilled and unskilled labor in building operations.

Lumber demand has been reported active, sales being double those of last year.

LOS ANGELES

Bank clearings as reported weekly, continue to show increases over last year for corresponding periods. These increases vary from two per cent to fifteen per cent. Activity in city and county construction projects will materially assist in maintaining the large volume of business now reflected in bank reports.

Curtailment of operation budgets and construction plans for the fruit growers' exchanges, is noticeable as an aftermath of the freezing weather in January. The proposed line of refrigerated ships for the California Fruit Growers' Exchange has been indefinitely postponed because of the losses which the growers have suffered recently. Public building improvements are also held up for the present in some of the centers of citrus fruit production.

The formalities of transferring the distribution system of the Southern California Edison Company to the City of Los Angeles took place March 1st.

Building permits for the month of February are far in excess of the same month last year.

PORTLAND

Although there has been little change in the general business situation in the past two weeks, business men are very sanguine about the industrial and business outlook. There is a better tone all around and a feeling that from now on industry and trade will improve. In the wheat growing districts of eastern Oregon the condition of winter wheat was never better because of the abundance of moisture which has soaked into the ground. Prices are firmer and many believe that this year's crop will bring $1.50 a bushel.

Lumber production is approaching normal and there are splendid prospects of the railroads placing large orders with the mills of Oregon and Washington.

Electrical retailing and jobbing business is good and is much better than was anticipated. Owing to the activity in building, contracting and fixture business is good.

SEATTLE

Due primarily to approximately two weeks of unexcelled spring-like weather, a generally improved condition along practically every line of industrial and business endeavor is noted in Seattle and other Puget Sound cities.

During the month of February, 115 permits for new residences valued at $332,445 were issued in Seattle. The aggregate value of building operations and repairs authorized by the building department during the month was $611,635, bringing the total value for the first two months of the year to approximately $2,500,000.

At the present time, more mills are resuming operation, and lumber production continues to increase, with sales and shipments keeping pace, or showing even more pronounced gains.

The peak of unemployment has passed. During February, a large number of the unemployed in the Puget Sound district were absorbed and this improvement is certain to increase with the opening of spring activities.

SPOKANE

Farmers generally, while impatient to get at their spring work, are cheerful over weather conditions as promising abundant moisture later on, particularly in irrigated districts, and also because in many localities it is a matter of tradition that good crops have followed long winters with much snow. Power companies are also pleased with the prospect of abundant water supply.

Farmers, cattlemen and sheepmen are in a much happier frame of mind than several months ago owing to rise in the prices of their commodities.

Farm improvements in the way of new buildings, painting and remodeling are expected to reach large proportions in the aggregate. It has been estimated that more than 8,000 electric lights will be installed in the farm houses of Washington, Idaho and Oregon this year, based upon the replies to a questionnaire sent out by a leading farm magazine.

The lumber business has not picked up as much as had been hoped the first of the year. The cold weather, while ideal for logging, retards the opening of some sawmills. Building operations which in Spokane bid fair in the matter of house construction, to far eclipse last year's excellent record, are being held up by the continued cold.

SALT LAKE CITY

While the business outlook is somewhat affected by a feeling of uncertainty as to the resumption of operations in some of the copper mining districts, there is a feeling of hopefulness that the coming of spring will bring a revival of activity by the copper properties at Bingham, Utah, and a consequent stimulus to business in general in the intermountain district.

A large amount of building is planned for the near future, and as soon as weather conditions permit this work will be under way. Many new homes will be under construction this spring.

The unemployment situation is somewhat improved, although this is still a very serious problem. The coming of spring weather will, however, furnish considerable relief.

Prices of farm products have increased materially during the past sixty days. This presents a more favorable situation in the agricultural districts.

Retail trade, in general, is fair. Electrical appliance sales in March in Salt Lake City will undoubtedly reflect some satisfactory figures, due to intensive campaigns which are being conducted, the most noteworthy of which is the washing machine campaign which is being put on by the Utah Power and Light Company.

DENVER

Cold weather early in March emphasized the unemployment problem. It developed many cases of need which will be cared for by the charities of that city until building and industrial developments are sufficient to absorb the over-supply of unskilled labor. labor.

New building is requiring more craftsmen than in several years past. Building permits for February were greater than any time for a similar month in the past ten years. Small dwellings are being built to such an extent in new sections of the city that the real estate market for improved property of that type has dropped over ten per cent in the past four months.

Conservatism still exists in the purchase of nearly all commodities. House wiring supplies are more in demand than either small heating or heavy duty appliances. Dealers' stocks are low and jobbers are not anticipating many large orders. Both dealers and jobbers are more careful in the extension of credit because of the unusually slow collections.

It is generally believed here that a marked beneficial reaction will not be felt for at least another sixty days.

Construction News and Industrial Developments

Suggesting to the Engineer, Contractor, Manufacturer, Dealer, Agent and All Business Men Opportunities for New Business

THE PACIFIC NORTHWEST

JEFFERSON, ORE.—A measure for better water and lighting conditions in this place carried at a recent election.

ANCHORAGE, ALASKA.—J. A. Magil announces that he is planning to build a salmon cannery here at an early date.

WATERVILLE, WASH.—The Twigg Auto & Electric Supply Company has increased its capital stock from $2500 to $10,000.

BELLINGHAM, WASH.—The Hansen Electric Company has been incorporated for $15,000 by Hans Hansen and Elija Hansen.

WALLA WALLA, WASH.—The city of Walla Walla plans to make improvements to its water system at a cost of about half a million dollars.

SEASIDE, ORE.—Construction of a sawmill and box factory at Elk Creek, near Ecola, will be begun soon, according to report.

TACOMA, WASH.—The contract for sinking test holes at the Lake Cushman dam site of the city of Tacoma's new hydroelectric project has been let to Lynch Bros., of Seattle.

SPOKANE, WASH.—Work on the new $100,000 packing plant will start at an early date, according to announcement made by Adam Brown. Work has been delayed owing to bad weather.

SOUTH BEND, WASH. — The Kleeb Mill, burned several years ago, is to be rebuilt immediately by J. W. Kleeb, A. J. Cole and C. A. Doty. Plant will be one of the largest on Willapa Harbor.

BAKER, ORE.—The Commercial Creamery Company, P. A. Goodhugh, manager, will erect a new milk condensery in Baker, according to report. The building and equipment will cost about $50,000.

ASTORIA, ORE.—A $150,000 water front site has been purchased by the Armstrong Tool Company, of Chicago, and a factory will be erected within the next few months, according to announcement.

CHEHALIS, WASH.—The sale of a large tract of timber on Rainy Creek in eastern Lewis county, and the erection of a mill at the mouth of the creek has been announced by the Milwaukie Land Company.

SHELTON, WASH.—The Peninsular Railway Company, according to report, has announced that it will erect machine shops which will be equipped with new machinery, etc., at a cost of approximately $100,000.

CLARKSTON, WASH. — Plans have been launched for constructing a dam across the Snake River at the mouth of Dry Gulch, to cost approximately $400,000. The dam will be used as a storage lake for timber.

SALEM, ORE.—The Niterday Signal Co. has been incorporated with a capital stock of $25,000 by A. C. Shute, W. V. Bergen, Edna May Finn, Hillsboro. The firm will deal in highway, railroad and other signal devices.

SEATTLE, WASH.—The city council of Seattle has accepted a bid for the remainder of a 1919 issue of $1,755,000 light department extension bonds. The money will be used to complete the Cedar River power project.

EVERETT, WASH.—The Kiwanis Club is planning for the construction of a building at Aldercrest where convalescent patients may engage in vocational work. Plans have been submitted by B. F. Turnbull, architect.

CHEHALIS, WASH.—The contract for a new steel bridge over the Chehalis River at Klaber has been awarded to Davis, Bigelow and Stratton of Seattle. It will be a 160-ft. steel span with concrete abutments and 18-ft. roadway.

OLYMPIA, WASH. — The Rainier Electric Bake Oven & Equipment Company, Seattle, has filed articles of incorporation with a capital stock, $15,000. Incorporators are Jacob Hieb, Peter Hieb, H. W. Stanislowski and Knut Halseth.

PUYALLUP, WASH.—Proposals for a power site at McMillan Falls, near here, have been made by the city council. The city has been advised by an engineer that ample power for the needs of the city can be derived at a cost of about $50,000.

PORTLAND, ORE.—A $200,000 furnace for manufacturing pig iron will be started within the next six weeks upon its property near Scappoose by the Oregon Charcoal Iron Co., according to announcement recently made by A. W. Martin, head of the concern.

COQUILLE, ORE. — The Mountain States Power Company is preparing to expend $40,000 in extending and improving its light and power service in Coquille and the adjacent territory this spring, according to report. Material has already been ordered and work will begin at once.

McMINNVILLE, ORE.—A permit has been granted to the city of McMinnville to construct a storage reservoir on the Nestucca river, tunnel,, canals and power house for the development of 5807 hp. on Walker creek for municipal purposes. The estimated cost of the project is $350,000.

MEDFORD, ORE.—Announcement has been made by J. C. Thompson, of the California Oregon Power Co., in charge of the extension work of that company's lines, that the cost of constructing the power line from the station at Prospect to the plant at Springfield is $6,000 per mile, the total cost of the project being estimated at approximately $750,000.

EUGENE, ORE.—Officials of the California Oregon Power Company are busy securing the necessary rights-of-way, franchises, etc., preparatory to starting construction work on its new 120-mile, 110-kv. transmission line from the hydroelectric plant on the Rogue River to Eugene, where a tie-in will be made with the Mountain States Power Company's system.

PORTLAND, ORE.—The construction of a factory in Portland for the extraction of turpentine, rosin and by-products from Douglas fir pitch is soon to be started by a corporation formed by W. H. Curtis and L. R. Russe, two Portland engineers, and H. H. Ward, one of the organizers of the Portland Vegetable Oil Mills Company. The initial capitalization has been placed at $100,000.

COEUR D'ALENE, IDA. — Officers of the Idaho Clays, Inc., have announced that they have formulated plans for the erection of a factory here which will cost approximately $500,000. A number of buildings will be built including a power plant, where steam will be generated for the operation of the factory. Clay products of all kinds will be manufactured from clay obtained in the vicinity.

BAKER, ORE.—The Eastern Oregon Light & Power Company, J. P. Lottridge, vice-president and general manager, has outlined an extensive maintenance and construction program, to cost $108,000, which includes tentative plans for expenditure in Baker and vicinity, plant, towns and lines in Baker division, improvements in plants and lines in LaGrande and vicinity. Work will be started at once, according to Mr. Lottridge.

CANBY, ORE.—A bond issue of $10,000 was approved by the voters of the town of Canby at a recent special election, for the purpose of acquiring or installing an election distribution system in the town. It is reported that the town expects to purchase the distribution system of the Molalla Electric Company, which now serves the city, for the valuation placed upon it by the Public Service Commission, or install a new system. It is stated that the Portland Railway Light & Power Co. will be asked to provide service. This action is said to have been brought on by dissatisfaction over an increase in rates granted the Molalla Electric Company by the Public Service Commission last July.

THE PACIFIC CENTRAL DISTRICT

FRESNO, CAL.—W. P. Fuller Company, one of the largest glass and paint companies in the West, is planning the construction of a $95,000 warehouse here.

PALO ALTO, CAL.—Frank E. and J. D. Woodward have purchased the northeast corner of Hamilton and High street, where an ice and cold storage plant will be built.

SAN FRANCISCO, CAL.—The Collins-Hencke Candy Co. has purchased a lot on Folsom street, near Second, where a three-story and basement reinforced concrete factory building will be constructed.

SAN JOSE, CAL.—Contract for the construction of the first unit of the Coast Fruit factory to be erected at 319 South 24th street, has been awarded to A. J. Beilson. H. L. Hulburt is president of the Coast Fruit Company.

RICHMOND, CAL.—Charles A. Miller, superintendent of the Galena Signal Oil Refinery at Franklin, Pa., has been making preliminary arrangements here for the erection of a new half-million dollar refinery for his company.

FRESNO, CAL.—Joseph F. Ryan, of Elgin, Ill., who recently completed the purchase of the Dairy Products Company plant at Tranquility, announces that the plant will be enlarged to double its present size, where it is planned to manufacture pure cream that will last for months. Machinery to equip the plant has been ordered.

EL CERRITO, CAL.—Barrett & Hilp, 918 Harrison St., San Francisco, have been awarded a contract by the Great Western Power Co., 14 Sansome St., San Francisco, to erect a two-story reinforced concrete and steel substation here. The approximate cost of plant is $125,000. Contract for the steel has been awarded to Pacific Rolling Mills, San Francisco.

SAN FRANCISCO, CAL.—Final drawings for the Horace Mann school, which have been approved by the Board of Education, provide for construction at a cost of $400,000, according to revised estimates. The plan is divided by the architect, John Reid, Jr., into four groups—the main, or academic building of three stories; the auditorium, the gymnasium and the shop group.

SAN FRANCISCO, CAL.—Bids will be received up to 3 p.m., April 12, by the Board of Public Works, San Francisco, under contract

No. 180 Hetch-Hetchy water supply project, for furnishing and delivering electric generators and accessory equipment for the Moccasin Creek power plant. Plans may be secured from M. M. O'Shaughnessy, city engineer, City Hall.

THE PACIFIC SOUTHWEST

EL PASO, TEX.—The American Co. will erect a sugar mill in Sinaloa.

FULLERTON, CAL.—The Hydro-Carbon Co. will erect a factory here for treating natural gas to make gasoline and other products.

OXNARD, CAL.—School trustees are planning for the erection of a $60,000 high school to be located between Simi and Santa Susana.

ALBUQUERQUE, New Mexico.—Jay J. Garfield has been awarded the contract for the erection of the Albuquerque Hotel for $271,592.

LONG BEACH, CAL.—Bond experts from New York employed by the city council have declared the validity of the $140,000 issue of water bonds.

LOS ANGELES, CAL.—The Highland Park Christian Church has awarded the contract for construction of a church building at West Ave., 58 and Monte Vista St.

LOS ANGELES, CAL.—The McCrea Construction Co. has been awarded contract for the erection of a factory for the American Aluminum Metal Products Co. at Burbank.

LONG BEACH, CAL.—Frank Thorn and W. M. Halliday will erect a theater on Windsor Place, east of Chestnut Place and west of Alley, to cost several hundred thousand dollars.

LOS ANGELES, CAL.—The Kay Bee Mfg. Co. will erect a two-story factory building on South Park Ave. near Jefferson St. for the manufacture of Kay Bee spotlights and Kay Bee stop signals.

SAN FERNANDO, CAL.—The International Chemical Products Co. will erect an ink factory at Maclay and Celis Sts. E. C. Fitz is president of the company, George W. Strang, general manager.

LOS ANGELES, CAL.—R. E. Miller, manager of the Owl Drug Company, purchased the property at the southwest corner of 9th and Hill, where he will build a 12-story, class "A" office building.

PHOENIX, ARIZ. — Construction has commenced on the additions to the refinery of the Rio Grande Oil Company. With the completion of buildings and tanks the improvements will total more than $75,000.

COLTON, CAL.—O. L. Emery & Son will erect a factory at the corner of 6th and West H streets, which will be occupied by the Walker Candy Co., upon completion. The building will be of concrete construction.

LOS ANGELES, CAL.—Plans are being prepared by C. A. Truesdell, Jr., architect, for a part two and part three-story brick and reinforced concrete addition to the Bottling Plant of the Santa Monica Dairy Co.

SANTA ANA, CAL.—Members of the Villa Park Orchards Association are considering the erection of a packing house and installation of pre-cooling and pre-icing plants. Willard Smith is president of the company.

LOS ANGELES, CAL.—The contracts for the passenger elevators to be installed in the new 12-story office building for the Bank of Italy, were awarded to the Llewellyn Iron Works. The contract price is not announced.

SANTA BARBARA, CAL.—Samuel F. B. Morse, president of the company owning the Hotel Del Monte, recently completed a survey of a portion of the 2600-acre Hope Ranch near Santa Barbara as the site for a new hotel. The estimated cost of the building is placed at $1,000,000.

BURBANK, CAL.—The American Aluminum-Metal Products Company has let the contract for a group of seven buildings to R. W. McCrea for the sum of $88,000. Buildings to be of brick with composition roof, metal sash and skylights.

LOS ANGELES, CAL.—Lynch-Cannon Engineering Company were the successful bidders on the brick and terra cotta office and freight terminal building for the Union Pacific Railway. $210,000 is given as the contract sum.

PASADENA, CAL.—The Tournament of Roses Association has awarded the contract for the stadium to W. A. Taylor for a sum said to be $300,000. The work will be done on a time and material scale. Seating capacity, 55,000.

LOS ANGELES, CAL.—F. O. Jean will erect a 100-room hotel and apartment on W. 7th St., according to plans now being prepared by architect W. E. Bowen and engineer W. E. Chadwick. The building will be five stories.

SAN BERNARDINO, CAL.—New buildings for the Santa Fe railroad shops are authorized in plans recently made public. Power house, incinerator, and lavatory buildings are included in the proposed expenditures of $204,000.

LOS ANGELES, CAL.—A 4-story, Class A apartment house will be erected for George Marcell of New York City, according to plans which are announced by architect H. C. Deckbar. No estimate of the cost has been made public.

MONROVIA, CAL.—The Southern Counties Gas Company is to build a tile and cement office building at 114-20 E. Lemon street. The contract has been let to W. H. McCune of this city. The permit calls for $15,400 estimated cost.

LONG BEACH, CAL.—Farmers and Merchants Bank has commissioned architect W. Horace Austin to prepare the plans for the new 6-story office and bank building to be located at Third and Pine Sts. Estimated cost $800,000.

SAN PEDRO, CAL.—The city harbor commission of Los Angeles has called for bids to equip the new transit shed at piers 187-188 with automatic sprinker systems. The bids will be for material as the city proposes to do the work.

LOS ANGELES HARBOR, CAL.—Llewellyn Iron Works was awarded the contract for erecting a steel transit shed at the harbor. The bid called for $44,600 to complete a shed 100 ft. by 400 ft., with steel frame and iron roof and sides.

GLENDALE, CAL.—The San Fernando Boulevard Improvement Association has secured the signatures of a majority of the property owners between Brand Boulevard and the city limits, to a petition for an ornamental lighting ysstem.

RIVERSIDE, CAL.—The Southern Sierras Power Company is clearing the ground on the Mill Creek site of its new power house. Construction work will start as soon as the weather permits. The location is above Forrest Home resort.

REDONDO, BEACH, CAL.—Property owners have arranged to buy the ocean front property of the Pacific Electric Company. It will be improved with ornamental lights and pier walkways to conform to the rest of the pleasure pier.

SAN PEDRO, CAL.—Los Angeles harbor commission will let contracts for the construction of an additional wharf and steel transit shed at piers 175-176 in the near future. Plans are being prepared by Engineer Vincent of the harbor board.

LOS ANGELES, CAL.—An 8-story loft building will be erected on Hill street near 7th for the Starr Piano Company. The structure is to be of steel frame construction with terra cotta facings. Estimated cost is given at $250,000 including elevators.

KINGMAN, ARIZ.—The Santa Fe Ry. will expend $6,000,000 in track improvements between Yampia and Griffiths, Ariz. Lloyd Harris is engineer in charge with headquarters in this city. A large part of the expenditure will be for double-tracking.

TUCSON, ARIZ.—Citizens are planning the erection of a canning and preserving plant in the near future. The following are directors: C. E. Goyette, P. R. Lucas, J. S. Mann, W. T. Robie, W. B. Sparkman, C. B. Perkins and Bentley Winstanley.

LOS ANGELES, CAL.—The Southern California Telephone Co., K. R. Bradley Construction Co., contractor, will make additions and alterations to the building on the northeast corner of Donnor & Vernon streets, at a cost of approximately $60,000.

LOS ANGELES, CAL.—Richard D. King, architect, has announced that construction work will start upon a two-story reinforced concrete building for the L. J. Christopher Co., contractor. The building will be used as an ice and refrigerating plant.

TUCSON, ARIZ.—The city council adopted resolutions to pave 3½ miles of streets at a toal expense of $225,000. The work will commence at once if the weather permits. Plans and specifications by the city engineer will be made public in a few weeks.

SANTA ANA, CAL.—Birch Park is to be equipped with an ornamental lighting system if the plans of the city fathers are approved at a special bond election to be held during March. The cost will be $10,000 including additions to the water system of the park.

HOLLYWOOD, CAL.—The Famous Players-Lasky Corporation will build the largest film laboratory in the West. Capacity of the laboratory is given as 1,500,000 feet of film per week. The structure is to be fireproof and the cost estimated at close to $750,000.

LONG BEACH, CAL.—$300,000 will be expended by the city in providing water facilities for the northwest section of the city. Electric pumping equipment and wells, together with the necessary piping are included in the plans as announced by city manager Hewes.

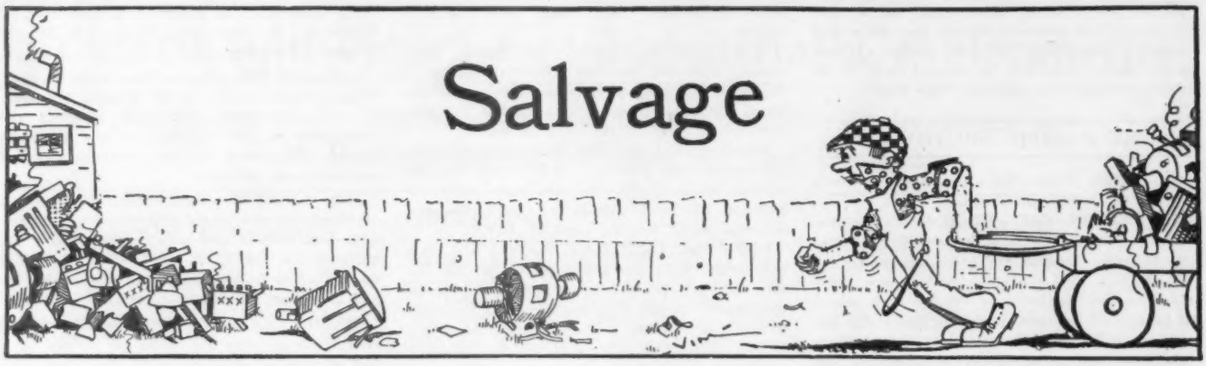
PHOENIX, ARIZ.—Twohy Bros. have been awarded the first contract on the United Verde Copper Co.'s new crushing plant at Clarksdale. The contract is for foundations only and the amount is $150,000. The entire cost of the plant will be $1,500,000 including machinery.

HOLLYWOOD, CAL.—Two new studio buildings are to be erected at once, the plans for the Cosmoart Picture Corporation are being prepared by J. E. Bowen and the Vitagraph Company has announced that the plans for its new stage are ready and the work will be done by day labor.

PHOENIX, ARIZ.—The contracts for highways which will be let during March will require more than 400,000 bbl. of cement, if concrete is selected from among the various types of paving bids to be received. 160 miles of paving is to be laid and $4,500,000 is the lowest estimate among the engineers for the completed improvements.

COMPTON, CAL.—The Samson Tire & Rubber Co., organized in Los Angeles four years ago and erecting its first factory here, will make additions and extensions to the plant which will nearly double its floor space and nearly treble its producing capacity. The additional investment in the plant will be approximately $200,000 and will include a new warehouse, electrical power room and generator equipment, extensions to mill room and tire buildings, construction of a new mixing mill line, as well as considerable new equipment.

LOS ANGELES, CAL.—A modern six-story and basement Class "A" store and office buildinb is to be erected on the property at the northeast corner of Sixth and Western Streets, which was recently leased by E. R. Stroufe, owner, to F. L. Dickinson for a period of 99 years. Mr. Dickinson also plans to erect a theatre building on the property to seat 1200 people. Plans and specifications for both structures are being prepared by architects Walker and Eisen. It is expected that construction work will start about May 1st.



Salvage Blows the Fuse

Every dog has his day, according to the proverb—and the dog with a broken tail has a weak end. "Salvage," which in some sense has served as the canine pet of the editorial rooms, living on the left-overs from the weightier diet of a serious menu, alternately loved and kicked, has now come to its end. With this issue the department terminates in favor of the more pressing needs of the growing business service of the paper. The family has, so to speak, moved into the business district and there is no further room for the dog. It is with some regret that the editor of this page thus makes a graceful exit, thanking one and all for their kind attention—but, it must be confessed, it is with some relief as well. It is easier by far to preach a better sermon, write a better book, or build a better mousetrap, than to be funny and although the world, we feel, had started its beaten path to our door, we are contemplating allowing the grass to grow again over the footsteps. We are thinking of going into the moustrap business.

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This Is Too, Too, Too Much

In changing the telephone directory of a western city recently, zeros were prefixed where numbers have less than four numerals. Shortly after the system went into effect, a leading citizen had occasion to call for such a number, asking for "Main 4." The operator said it, "Main, oh, oh, oh, four"—and the leading citizen replied, "Oh, oh, oh, yes."

* * *

Try This on Your Corona

Having accidentally pressed down the wrong shift on the office infant, the following practical code for private correspondence between stenographers during office hours was discovered. To solve the code, reverse the process.

@ 29:%3417# ?*30

285* %330 43$03?5 8 %91! ;6 *@5

59 80$28?* 9$2@#% 0@44

3 06 5@5 *3 ?@: !@## @$#330

2*3: 8: @ $#3308:_ ?@4

* * *

The Modern Electrical Home

A quotation is sent us from the March number of Everybody's Magazine which suggests a new principle of operating electric appliances. The hero and heroine, apparently, were forced to move. However,

"They found an apartment on the West Side of New York, with plenty of sunshine for Cissy to run the electric sewing machine by."

At last, it seems, electric power has been harnessed from the sun!

Wireless Weather

Those who complain of the telephone service may be thankful that they do not live in Japan, where the weather bureau has recently found it necessary to install wireless apparatus owing to the fact that the weather moves faster than it is possible to get through telephone or telegraph connections.

* * *

ELECTRICAL HYBRIDS

XXIII — The Electric Hybridiot

The electric hybridiot writes all these rhymes
In hybridiomatic phrases
Which hybridiosyncrasy's one of her crimes—
Or a virtue, whichever the case is.

Both her head and her heart are uncommonly light,
Though on hats she's inclined to grow heated.
Her nose may be shiny, at least it is bright—
It depends on the way she is treated.

Her costume is shady—we point to the skirt—
Her feet, right and left, are both standard.
They say she is frivolous, light and a flirt—
As for me, I declare she is slandered.